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CERTIFICATION OF CLOSURE FOR THE BUILDING 123 COMPONENTS OF RCRA UNIT 40

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CERTIFICATION OF CLOSURE FOR THE BUILDING 123 COMPONENTS OF RCRA UNIT 40

REVISION 0

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CERTIFICATION OF CLOSURE FOR THE BUILDING 123 COMPONENTS OF RCRA UNIT 40

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10 EXECUTIVE SUMMARY

RCRA Unit 40 in Building 123 is an interim status unit. Closure was done in accordance with the <u>Closure Plan for Building 123 Components of RCRA Unit 40</u>, November 1997 (Closure Plan) and the requirements of the Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Part 265

All above-ground components of RCRA Unit 40 in Building 123 were removed and managed as RCRA listed mixed waste in accordance with Option 2 of the Closure Plan. This waste will be sent to an approved Treatment Storage and Disposal Facility (TSDF) for disposition

Closure of the pipe chases and sumps in Room 156 and 158 was done in accordance with Option 1 (decontamination) of the Closure Plan Analytical testing confirmed that these components met RCRA Clean Closure Standards

Closure of the pipe chases and sump in Room 157 was also done accordance with Option 1 of the Closure Plan. Analytical testing showed that nickel was present at 111 ppb which is 11 ppb above the Tier 2 standard. Since nickel is not identified as a contaminant of concern nor is it a RCRA regulated hazardous waste, CDPHE has determined that no further action will be required for Sump 157.

Closure of the sump in Room 125 and the underground piping did not meet the Closure Performance Standards. The rinsate sample for Room 125 exceeded standards for lead and rinsate sample for the underground piping exceeded standards for chromium and lead. Remediation of the Room 125 sump and the underground piping will be deferred to the Environmental Restoration (ER) Department. ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148, and the under building contamination (UBC) associated with Building 123. This evaluation will determine what, if any, remediation will be required for these areas

20 INTRODUCTION

The purpose of this report is to verify completion of RCRA Closure operations and to certify closure of the Building 123 components of RCRA Unit 40 that have met RCRA clean closure standards

RCRA Unit 40 is the site-wide network of tanks, pipelines, and sumps, constructed to transport and temporarily store process waste from the point of origin to on-site treatment and discharge points. The Building 123 component of RCRA Unit 40 consisted of regulated process waste lines (above and below grade), sumps, and pump stations. This process waste system was used to transport laboratory wastes generated in Building 123, to Building 374 for treatment.

Closure of RCRA Unit 40 in Building 123 (an interim status unit) was done in accordance with the <u>Closure Plan for Building 123 Components of RCRA Unit 40</u>, November 1997 (Closure Plan) and the requirements of the Colorado Hazardous Waste Regulations, 6 CCR 1007-3, Part 265 The Closure Plan was approved by the Colorado Department of Public Health and Environment (CDPHE) on January 8, 1998 Partial closure of RCRA Unit 40 was an element of a larger project to decommission Buildings 123, 113, 114, and 123S This project was conducted as an accelerated remedial action approved under the Building 123 Proposed Action Memorandum (PAM) The PAM is a decision document for the decommissioning of Building 123 and was approved by CDPHE on August 25, 1997

Rocky Mountain Remediation Services, L L C, retained an independent Professional Engineer from EnviroTemps (ET) to witness the closure activities and perform this certification. This report provides evidence to support the closure determinations by the Owner/Operator and verification by an independent Professional Engineer (PE), as required by 6 CCR 1007-3, Section 265 115, for RCRA closure of an

30 HISTORICAL OVERVIEW AND WASTE CHARACTERIZATION

Building 123 was constructed in 1953 and was used as an analytical laboratory, dosimetry, and instrument calibration facility. The building also was used for medical research, storage for all radiological health records, office space for radiation health specialists, and a laboratory for calibration of criticality alarms. The process waste system in Building 123 was used from 1953 through 1997 when the building was decommissioned.

The building was modified several times through its operation. The process waste system was modified in 1968 when a extension to the east wing was built, in 1972 when the west wing was added to the building, in 1974 when portions of the above-ground piping were installed and old underground lines were grouted, in 1989 when the underground line to Valve Vault 18 was replaced, and finally in 1995 when various upgrades were made to the above-ground piping. A detailed description of the history of the process system in Building 123 can be found in the Closure Plan.

The process waste system incorporated into RCRA Unit 40 included the system components in Rooms 103, 103A, 105, 111, 112, 113B, 121, 123, 123A, 125, 126C, 127, 155, 155B, 156, 157, and 158, the active underground line (double walled pipe) between Room 158, Valve Vault 18, and Tank D-853 in Building 428, sumps in Rooms 125, 156, 157, and 158, and pipe chases in Room 156, 157, and 158

The Closure Plan describes the waste streams which were disposed of in the Building 123 component of RCRA Unit 40, and also provides a list of EPA waste codes used in the building

4.0 CLOSURE CERTIFICATION ACTIVITIES

4.1 BUILDING 123 RCRA CLOSURE TEAM

Closure activities were conducted in February and March 1998 by Resource Technologies Group (RTG) under subcontract to Denver West Remediation and Construction (DWRC) and Kaiser-Hill RMRS provided management and technical support of the Building 123 Decommissioning project for Kaiser-Hill As stated above, RMRS subcontracted independent Professional Engineering services from EnviroTemps

4 2 CLOSURE OPTIONS

The Closure Plan listed three options for closure of RCRA Unit 40 in Building 123 which are summarized below Details may be found in the Closure Plan and in the Construction Package for Building 123 Strip-Out.

Option 1 - Decontamination using a solution capable of removing the contaminates of concern and testing the final rinsate to verify treatment standards according to the Rocky Flats Environmental Technology Site (RFETS) RCRA Permit, Part 10, Closure, Section C, "Clean Closure by Decontamination"

Option 2 - Manage as RCRA mixed waste with no on-site treatment

Option 3 - Debris treatment as defined by RFETS RCRA Permit, Part 10, Closure, Section D, "Debris Rule Decontamination"

4 3 BUILDING 123 CLOSURE ACTIVITIES

RCRA Unit 40 in Building 123 was divided into three major components for closure

Above-ground system components All above-ground process waste piping (steel and PVC), pumps, and polyethylene pump containments were managed under Option 2 These system components were stripped-out and packaged in waste crates as low level mixed waste for subsequent disposal at an approved and permitted Treatment Storage and Disposal Facility (TSDF)

Pipe chases and sumps. The pipe chases and sumps were managed under Option 1. First the pipe chases and sumps were washed with a solution of trisodium phosphate and sodium carbonate. The volume of solution used was approximately 3 times the volume of the chases and sumps. The chases and sumps were then liberally rinsed with water. Finally, a specified volume of water which did not exceed 5% the capacity of each pipe chase and sump was used as a final rinse. Composite samples of the rinsate were collected for analysis. Three composite samples were collected one for each sump and associated pipe chases in Room 156, 157, and 158. A separate sample was collected for the sump in Room 125 (Room 125 does not have any pipe chases). All waste generated during the pipe chase and sump closure activities was routed to the process waste system downstream of the closure activities (Building 374) or packaged as a listed mixed waste.

<u>Underground piping</u> The underground piping was managed under Option 1 This piping begins in Room 158, where the process waste system exits Building 123 It drains to Valve Vault 18, passes through Valve Vaults 17 and 16, and discharges to Tank D-853 in Building 428 This entire stretch of piping was washed with a solution of trisodium phosphate and sodium carbonate The volume of solution used was approximately 3 times the volume of the piping and the D-853 tank. The piping was then liberally rinsed with water. Finally, a specified volume of water which did not exceed 5% the capacity of the piping and Tank D-853, was used as a final rinse. A sample of the rinsate was collected from the D-853 tank for analysis.

5 0 COMPARISON OF SAMPLE RESULTS TO CLOSURE PERFORMANCE STANDARDS

5.1 SUMMARY OF CLOSURE PERFORMANCE STANDARDS

The Closure Performance Standards are defined in the Closure Plan A summary of the Closure Performance Standards is provided below

Option 1. Decontamination.

- 1 An appropriate solution must be used for decontamination
- 2 The system must be flushed with the decontamination solution to remove trace amounts of acids or bases
- 3 Rinsate samples must be evaluated against the final rinsate closure performance standards from the Rocky Flats Cleanup Agreement (RFCA) Permit, Part X
- 4 The final rinsate volume must not exceed 5% of the capacity of the system
- 5 All visible waste residuals must be removed

- 6 The final rinsate concentrations of priority pollutants and heavy metals must be below the Tier 2 action levels as defined in Attachment 5 of RFCA
- 7 The pH of the rinsate must be between 6 and 9

Option 2. Dispose as Mixed Waste

- 1 Waste generated must be managed as RCRA mixed waste with EPA Waste Codes of F001, F002, and F005
- 2 The waste generated must be managed in accordance with applicable state and federal regulations

Option 3. Debris Treatment

Since Option 3 was not used during the closure of RCRA Unit 40 in Building 123, the Closure Performance Standards will not be summarized

5 2 COMPARISON OF CLOSURE ACTIVITIES WITH THE PERFORMANCE STANDARDS

The following is a comparison of each major component of RCRA Unit 40 in Building 123 to the Closure Performance Standards This comparison demonstrates whether the unit may be closed Tables summarizing all the sample analytical results may be found in Appendix A

5.2.1 Above-ground system components

- 1 All above-ground process waste piping and ancillary equipment was packaged as mixed waste with the waste code F001, F002 and F005
- 2 Since the above-ground piping was handled according to Option 2 (managed as a hazardous waste) it was sampled for Land Disposal Restriction (LDR) standards according to 40 CFR 268 40 and 268 48 Samples of both the PVC and the steel pipe were collected. All pipe was determined to comply with the LDR standards

Conclusion: The above-ground components of RCRA Unit 40 met the Closure Performance Standards. Waste generated has been managed as RCRA mixed waste with EPA Waste Codes of F001, F002, and F005, and the packaged waste is being managed in accordance with RFETS procedures, which meet applicable state and federal regulations for on-site storage at a TSDF

5 2 2 Pipe Chases and Sump in Room 156

- 1 A solution of trisodium phosphate/sodium carbonate was used for decontamination
- 2 The pipe chases and the sump in Room 156 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan
- 3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.

- 4 The final rinsate volume used in the pipe chases did not exceed 6 pints. The final rinsate volume used in the sump did not exceed 25 gallons. These volumes are less than 5% of the capacity of the components.
- 5 All visible waste residuals were removed during washing and rinsing of the sump. The pipe chases were not visible
- 6 No contaminants were found to exceed Tier 2 Action levels. As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA.
- 7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion: Closure of the pipe chases and sump in Room 156 meet the Closure Performance Standards

5.2 3 Pipe Chases and Sump in Room 157

- 1 A solution of trisodium phosphate/sodium carbonate was used for decontamination
- 2 The pipe chases and the sump in Room 157 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan
- 3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.
- 4 The final rinsate volume used in the pipe chases did not exceed 19 5 pints. The final rinsate volume used in the sump did not exceed 44 gallons. These volumes are less than 5% of the capacity of the components.
- 5 All visible waste residuals were removed during washing and rinsing of the sump. The pipe chases were not visible
- 6 As shown in Appendix B, no contaminants of concern were found to exceed Tier 2 action levels. Nickel was present at 111 ppb which is 11 ppb above the Tier 2 standard Since nickel is not identified as a contaminant of concern, nor is it a RCRA regulated hazardous waste, CDPHE has determined that no further action will be required for the sump in Room 157 (documented in correspondence between K-H and CDPHE dated April 3, 1998)
- 7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion Closure of the pipe chases and sump in Room 157 meet the Closure Performance Standards

5.2 4 Pipe Chases and Sump in Room 158

1 A solution of trisodium phosphate/sodium carbonate was used for decontamination

- 2 The pipe chases and the sump in Room 158 were adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan
- 3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.
- 4 The final rinsate volume used in the pipe chases did not exceed 10 5 pints. The final rinsate volume used in the sump did not exceed 31 gallons. These volumes are less than 5% of the capacity of the components.
- 5 All visible waste residuals were removed during washing and rinsing of the sump. The pipe chases were not visible
- 6 No contaminants were found to exceed Tier 2 Action levels. As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA
- 7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion: Closure of the pipe chases and sump in Room 158 meet the Closure Performance Standards

5.2.5 Sump in Room 125

- 1 A solution of trisodium phosphate/sodium carbonate was used for decontamination
- 2 The sump in Room 125 was adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan
- 3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.
- 4 The final rinsate volume used in the sump did not exceed 2 gallons. This volume is less than 5% of the capacity of the sump.
- 5 All visible waste residuals were removed during washing and rinsing of the sump
- 6 As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA, except for lead. The rinsate concentration for lead was 56 ppb and the action level for lead is 15 ppb.
- 7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion. Closure of the sump in Room 125 did not meet the Closure Performance Standards. Remediation of this sump will be deferred to the Environmental Restoration (ER) Department. ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148 and

the under building contamination (UBC) associated with Building 123 This evaluation will determine what, if any, remediation will be required for this area

5.2 6 Underground Pipe from Room 158, Building 123 to Tank D853 in Building 428.

- 1 A solution of trisodium phosphate/sodium carbonate was used for decontamination
- 2 The piping was adequately flushed with the decontamination solution to remove trace amounts of contaminants of concern as identified in the Closure Plan
- 3 The rinsate sample has been evaluated against the performance standards from the RFCA Permit, Part X. The comparison can be found in Appendix B.
- 4 The final rinsate volume used in the piping and tank did not exceed 113 gallons. This volume is less than 5% of the capacity of the piping and Tank D853.
- 5 The piping is underground and therefore not visible for inspection
- 6 As shown in Appendix B, the final rinsate concentrations of priority pollutants and heavy metals were below the Tier 2 action levels as defined in Attachment 5 of RFCA, except for chromium and lead. The analysis of the rinsate revealed 588 ppb chromium and 21 7 ppb lead remained within the underground portion of the line. The action level of chromium is 100 ppb, and the action level for lead is 15 ppb.
- 7 All rinsate was processed in the permitted, on-site, liquid waste treatment plant at Building 374

Conclusion: Closure of the underground piping did not meet the Closure Performance Standards Remediation of the underground piping will be deferred to the Environmental Restoration (ER) Department ER will evaluate data from soil samples, groundwater monitoring, and the rinsate analysis to rank Individual Hazardous Substance Sites (IHSS's) 121, 148 and the under building contamination (UBC) associated with Building 123. This evaluation will determine what, if any, remediation will be required for this area.

6 0 CONCLUSION AND CLOSURE CERTIFICATION

Based upon observations and investigations presented in this report, the Closure Performance Standards stated in Section 5 0 of this report are accurate

The undersigned hereby certifies the following

- 1 The following components of RCRA Unit 40 in Building 123 at the Rocky Flats Environmental Technology Site met RCRA Clean Closure standards prescribed in the Closure Plan and meet the requirement of the Colorado Hazardous Waste Act (CHWA) regulations for RCRA closure under interim status, as defined in 6 CCR 1007-3, Section 265, Subpart G
 - all above-ground piping, removable ancillary equipment and secondary containment
 - sumps and pipe chases in Rooms 156, 157 and 158
- 2 The following components of RCRA Unit 40 in Building 123 will be deferred to ER for ranking and future remediation as applicable
 - the Sump in Room 125 (due to 56 ppb Pb)
 - the underground pipe from Building 123 to Building 428 (due to 588 ppb Cr and 21 7 ppb Pb)

Professional Engineer

3 - 20

Date

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70 REFERENCES

Closure Plan for Building 123 Components of RCRA Unit 40 (Closure Plan), Revision 0, November 1997

Construction Package for Building 123 Stnp-Out, Revision 14, February 27, 1998

Proposed Action Memorandum for the Decommissioning of Building 123 (PAM), Revision 6, dated March 26, 1998

Waste Management Plan for Building 123, Revision 1, dated March 1998

Appendix A - Floor Plan of RCRA Unit 40 piping in Building 123

Appendix B - Analytical Results

Appendix B - Analytical Results for the Sumps and Pipe Chases in Rooms 156, 157, and 158

Sample from rinsate from 5123, STIMP 156	Sample # 98 A 0996-001
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Is the contaminant a "Contaminant of	Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?																											
		-	i	YES	YES	YES	YES	YES	YES	윋	욋	YES	YES	YES	2	<u>2</u>	<u> </u>	XEX	XES	YES	XES	- YES	YES	S	S	YES	옷	
Is contaminant present	above Tier 2 Action Levels?			NO	NO	NO	NO	NO	NO	ON	ON	ON	ON	NO	ON	ON.		ON	ON.	NO NO	ON.	OZ.	CZ	2 2		ON	ON.	
Canada of Tion?	Conversion of rice 2 Action Levels to ppb			7 ppb	5 ppb	200 ppb	S ppb	2470 ppb	3650 ppb	106,000 ppb	6 ppb	50 ppb	2,000 ppb	5 ppb	4 ppb	100 ppb		5 ppb	27 6 ppb	5 ppb	100 ppb	100 ppp	100 m	100 ppd	1 200 mb	200 pap	NA	•
10 TO	Lier 2 KFCA Action Levels (mg/L or ppm)			7 00E-03	5 00E-03	2 00E-01	\$ 00E-03	2 47E+00	3 65E+00	1 06E+02	6 00E-03	5 00E-02	2 00E+00	5 00E-03	+ 00E-03	1 00E-01		5 00E-03	2 76E-02	5 00E-03	1 00E-01	1 00E-01	1000	1 005-01	1 205 00	1 30E+00	NA not on Tier	2 Table
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Sample # 2000200-001	Contaminants of concern and any contaminant present above action levels			1 Dichloroethylene	1 1 2-Trichloroethane	1-1-1-Trichlorochane	1-7-Dichloroethane	2.Butanone (Methyl othyl ketone)	Actione	Aluminim Al	Antimony Sh	Arsenic As	Barum Ba	Benzene	P Berdlum Be	1 .		Cadmium, Cd	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroform		Chromium, Cr	Cobalt, Co	Copper, Cu	Ethylbenzene	Iron, Fe

SUMPL Report Date 2.24 98
Summirized Tuesday March 24, 1998
Ted A. Hopkins

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Action Levels		Contaminants of concern and any	UG/L in sample	Tier 2 RFCA	Conversion of Tier 2	Is contaminant present	Is the contaminant a "Contaminant of
Not found in the Paper Not found in the Pa		contaminant present above action	or ppb	Action Levels	Action Levels to ppb	above Tier 2 Action	Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
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Potassium, K Potassium, K 1 000 Total Not found in the rable NA NO Pridinc 70 U Not on Tier 2 NA Not on Tier 2 list Selenium Sc 18 U Total 500E-02 50 ppb NO Sulver Ag 10 U Total 183E-01 183 ppb NO Soltium 7 510 Total Not found in RFCA Tier 2 NA NO Sodium PECA Tier 2 183 ppb NO Tetrachlorocitylene 0 5 U 50E-03 5 ppb NO Thallium, Til 2 3 U Total 2 19E+01 21,900 ppb NO Tracklorocitylene 0 5 U 5 00E-03 5 ppb NO Tracklorocitylene 0 5 U 1 00E+00 1000 ppb NO Vanadium V 0 6 U Total 2 56E-01 2 56 ppb NO Vanadium V 0 6 U Total 1 00E+01 10,000 ppb NO Vincilenes 0 5 U 1 00E+01 10,000 ppb NO Sinc, Zn 9 6 Total 1 1,000 ppb NO<	1	Nickel Ni	0 60 U Total	1 00E-01	100 ppb	NO	ON
Priding Nation Tier 2 (a) Not on Tier 2 (b) Not on Tier 2 (b) Selenuum Sc 18 U Total 500E-02 50 ppb NO Soltur Ag 10 U Total 181E-01 181 ppb NO Sodium 7 510 Total Not found in RFCA Tier 2 NO NO Strontium Sr 114 Total 2 19E+01 21,900 ppb NO Tetrachlorocity lene 0 5 U 50E-03 5 ppb NO Trablium, Tl 2 3 U Total 2 19E+01 21,900 ppb NO Tablium, Tl 2 3 U Total 2 19E+01 21,900 ppb NO Trablium, Tl 2 3 U Total 2 19E+01 21,900 ppb NO Trablium, Tl 2 3 U Total 2 10E+01 21,900 ppb NO Trablium, Tl 0 5 U 5 00E-03 5 ppb NO Vandelum V 0 6 U Total 2 5 ppb NO Vanadium V 0 5 U 2 00E-03 2 ppb NO Vylenes 0 5 U 1 00E+01 1 0,000 ppb NO <		Potassium, K	1 000 Total	Not found in the	NA	O _N	ON
Pridine 70 U Not on Tier 2 Iist NA Not on Tier 2 Iist Selenium Sc 18 U Total 500E-02 50 ppb NO Sodium 7 510 Total 18 1E-01 183 ppb NO Sodium 7 510 Total Not found in NA NO Sodium 7 510 Total Not found in NA NO Srontium Sr Table 114 Total 2 19E+01 21,900 ppb NO Tracklorocthylene 0 5 U 5 00E-03 5 ppb NO Tin, Sn 0 5U 1 00E+00 1000 ppb NO Tracklorocthylene 0 5U 1 00E+00 1000 ppb NO Vanadium V 0 5U 5 00E-03 5 ppb NO Vinyl chloride 0 5U 2 00E-03 2 ppb NO Vylenes 0 5U 1 00E+01 10,000 ppb NO Sylenes 0 5U 1 00E+01 11,000 ppb NO				RFCA Tier 2 Table			
Sclennum Sc 18 U Total 508-02 50 ppb NO Stiver Ag 10 U Total 181E-01 183 ppb NO Sodium 7 510 Total Not found in NA NO Strontium Sr 114 Total 2 19E+01 21,900 ppb NO Tetrachlorocity lene 0 5 U 5 00E-03 5 ppb NO Trin, Sn 10 4 Total 2 19E+01 21,900 ppb NO Trin, Sn 0 5 U 5 00E-03 5 ppb NO Trin, Sn 0 5 U 1 00E+00 1000 ppb NO Trichlorocity lene 0 5 U 5 00E-03 5 ppb NO Vanadium V 0 6 U Total 2 50E-01 2356 ppb NO Vinyl chloride 0 5 U 2 00E-03 2 ppb NO Vinyl chloride 0 5 U 1 00E+01 10,000 ppb NO Zinc, Zn 9 6 Total 1 10E+01 1 1,000 ppb NO		Pyridine	70 U	1 _	NA	Not on Tier 2 list	YES
Steamun Schmin Schmin Steamun Steamun Schmin Sodium 10 U Total 183E-01 183 ppb NO Sodium 7 510 Total Not found in RFCA Tier 2 NA NO Strontium Sr 114 Total 2 19E+01 21,900 ppb NO Terrachlorocitylene 0 5 U 5 00E-03 5 ppb NO Tin, Sn 10 4 Total 2 19E+01 21,900 ppb NO Tin, Sn 10 4 Total 2 19E+01 21,900 ppb NO Trichlorocitylene 0 5U 1 00E+00 1000 ppb NO Vanadium V 0 6U Total 2 56E-01 256 ppb NO Vinyl chloride 0 5U 2 00E-03 2 ppb NO Xylenes 0 5U 1 00E+01 10,000 ppb NO Zinc, Zn 9 6 Total 1 10E+01 11,000 ppb NO	Ц,	Sammeles	1 & 11 Total	\$ 00F-02	50 pp	ON.	YES
Sodium 7 510 Total Not found in PA NA NO Sodium 7 510 Total Not found in PA NA NO Strontium Sr 114 Total 2 19E+01 21,900 ppb NO Tetrachlorocthylene 0 5 U 5 00E-03 2 ppb NO Trailium, Ti 2 3 U Total 2 19E+01 21,900 ppb NO Totuene 0 5 U 1 00E+00 1000 ppb NO Trchlorocthylene 0 5 U 5 00E-03 5 ppb NO Vanaduum V 0 6 U Total 2 56E-01 256 ppb NO Vinyl chloride 0 5 U 2 00E-03 2 ppb NO Vinyl chloride 0 5 U 2 00E-03 2 ppb NO Xylenes 0 5 U 1 00E+01 10,000 ppb NO Zinc, Zn 9 6 Total 1 10E+01 11,000 ppb NO	•	Scientific Scientific Appropriate Appropri	10 11 Total	183E-01	183 pub	ON	YES
m Sr I14 Total 2 19E+01 21,900 ppb NO oroethy lone 0 5 U 5 00E-03 5 ppb NO n, T1 2 3 U Total 2 19E+01 21,900 ppb NO n, T1 2 3 U Total 2 19E+01 21,900 ppb NO octhylene 0 5U 1 00E+00 1000 ppb NO im V 0 6U Total 2 56E-01 256 ppb NO ilorde 0 5U 2 00E-03 2 ppb NO in V 0 6U Total 2 56E-01 256 ppb NO ilorde 0 5U 2 00E-03 2 ppb NO ilorde 0 5U 2 00E-03 2 ppb NO ilorde 0 5U 2 00E-03 2 ppb NO ilorde 0 5U 1 00E+01 10,000 ppb NO	•	Silver AB	7 \$10 Total	Not found in		9	NO
m Sr 114 Total 2 19E+01 21,900 ppb NO oroethylene 0 5 U 5 00E-03 5 ppb NO n, Tl 2 3 U Total 2 00E-03 2 ppb NO n, Tl 10 4 Total 2 19E+01 21,900 ppb NO octhylene 0 5U 1 00E+00 1000 ppb NO inn V 0 6U Total 2 56E-01 256 ppb NO ilorde 0 5U 2 00E-03 2 ppb NO ilorde 0 5U 1 00E+01 10,000 ppb NO ilorde 0 5U 1 00E+01 10,000 ppb NO ilorde 0 5U 1 10E+01 11,000 ppb NO		000000		RFCA Tier 2 Table			
orocethy lene 0 5 U 5 00E-03 5 ppb NO n, Tl 2 3 U Total 2 10E+01 2 19bb NO cethylene 0 5U 1 00E+00 1000 ppb NO octhylene 0 5U 5 00E-03 5 ppb NO im V 0 6U Total 2 56E-01 256 ppb NO iloride 0 5U 2 00E-03 2 ppb NO iloride 0 5U 1 00E+01 10,000 ppb NO iloride 0 5U 1 00E+01 10,000 ppb NO	ئٽل	Strontium Sr	114 Total	2 19E+01	21,900 ppb	NO	NO
n, Tl 2 3 U Total 2 00E-03 2 ppb NO 10 4 Total 2 19E+01 21,900 ppb NO 0 5U 1 00E+00 1000 ppb NO im V 0 5U 2 06E-03 5 ppb NO ilorde 0 5U 2 06E-01 256 ppb NO ilorde 0 5U 2 00E-03 2 ppb NO 0 5U 1 00E+01 10,000 ppb NO 1 0 5U 1 10E+01 11,000 ppb NO	T,	Tetrachloroethylcne	050	5 00E-03	5 ppb	NO	YES
octhylene 10 4 Total 2 19E+01 21,900 ppb NO octhylene 0 5U 1 00E+00 1000 ppb NO im V 0 6U Total 2 56E-01 256 ppb NO iloride 0 5U 2 00E-03 2 ppb NO o 5U 1 00E+01 10,000 ppb NO n 5U 1 10E+01 11,000 ppb NO	1,_	Thallium, Tl	2 3 U Total	2 00E-03	2 ppb	NO	NO
oethylene 0 5U 1 00E+00 1000 ppb NO m 0 5U 5 00E-03 5 ppb NO iloride 0 5U 2 56E-01 256 ppb NO iloride 0 5U 2 00E-03 2 ppb NO iloride 0 5U 1 00E+01 10,000 ppb NO iloride 9 6 Total 1 10E+01 11,000 ppb NO	1,_	Tin. Sn	10 4 Total	2 19E+01	21,900 ppb	NO	NO
sethylene 0 5U 5 00E-03 5 ppb NO m V 0 6U Total 2 56E-01 256 ppb NO loride 0 5U 1 00E+01 10,000 ppb NO 9 6 Total 1 10E+01 11,000 ppb NO	<u>. </u>	Toluene	0 SU	1 00E+00	1000 ppb	NO	YES
m V 0 6U Total 2 56E-01 256 ppb NO loride 0 5U 2 00E-03 2 ppb NO 0 5U 1 00E+01 10,000 ppb NO 9 6 Total 1 10E+01 11,000 ppb NO	1.	Trichloroethylene	0 SU	S 00E-03	5 ppb	NO	YES
loride 0 5U 2 00E-03 2 ppb NO 0 5U 1 00E+01 10,000 ppb NO 9 6 Total 1 10E+01 11,000 ppb NO	1	Vanadium V	0 6U Total	2 S6E-01	256 ppb	NO	NO
0 5U 1 00E+01 10,000 ppb NO 9 6 Total 1 10E+01 11,000 ppb NO	上	Vinyl chloride	0 SU	2 00E-03	2 ppb	NO	YES
9 6 Total 110E+01 11,000 ppb NO	1.	Xylenes	O S U	1 00E+01	10,000 ppb	NO	YES
		Zinc, Zn	9 6 Total	1 10E+01	11,000 ppb	NO	NO

• |

SUMP 150 Sample Report Date 2-24 98 Summan ed Tuesday March 24-1998 Ted A Hopkins

mp 157		1 (1)(1)
sate from B123, Su		0 CUU 3000 Y 00 -1-1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
Sample from rinsate from B123, Sump 157	SUMP 157	

Conversion of Tier 2 Is contaminant present Is the contaminant a "Contaminant of Action Levels to ppb above Tier 2 Action Concern" as identified in the RCRA Clasure Plan for RCRA Unit 40? Closure Plan for RCRA Unit 40?	YES			200 ppb NO 153	NO	ON	ON	ON O	ON		CZ	ON ON	NO.	4 ppb	100 ppp dqq 001	VES		ON	ON	ON	100 mb NO		NO day	ON	ON ON STATE ON		JAN 200 NO YES	O TO	
Tier 2 RFCA Action Levels (mg/L or ppm)		7 00E-03	\$ 00E-03	2 00E-01	6 00E 03	3 005-03	2 + / 5 + 00	3 035700	1 005-02	6 00E-03	\$ 00E-02	2 00E+00	S 00E-03	4 00E-03	1 00E-01		\$ 00E-03	2 76E-02	\$ 00E-03	1 00F-01	1000	1 005-01	1005.01	1 005-01	2 19E+00	1 30E+00	10 100	7 005-01	NA, not on 1 ler
96-002 012 UG/L in sample or ppb		0.50	0.5(1	0.00	0.50	0.50	2.0	2 U	138 Total	1 + U Total	i 6 U Total	21 9 Total	050	n 2 11 Total	5 Bascline	Containinant	1 Total	2011	007	050	0.50	26 Baseline	Collianinain	13.2 Total	0 50 U Total	4 8 Total	0.7	0 SU	152 Total
SUMP 157 Sample # 98A0996-002 Metals 98A0996-002 012 Contaminants of concern and any UG/L in scontaminant present above action or ppb levels		And the last of the second	1,1 Dichloroethylene	1,1,2-Trichloroethane	1-1-1-Trichloroethane	1-2-Dichloroethane	2-Butanone (Methyl ethyl ketone)	Acetone	Aluminum Al	Antimony Sb	Arean As	000000000000000000000000000000000000000	Barium, Da	Benzene	Beryllium Be	Bromodichloromethane		Cadmium, Cd	Carbon disulfide	Carbon tetrachloride	Chlorobenzene	Chloroform		Chromium, Cr	Cobalt Co	Copper Cu	Dibromochloromethane	Fihvihenzene	Ten He

SUNP 157
Sample Report Date 2/25/98
Summanzed Tuesdin Mirch 24 1998
Ted A Hopkins

					Is the contominant a "Contaminant of
Contaminants of concern and any	UG/L in sample or pub	Tier 2 RFCA Action Levels	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action	Concern" as identified in the RCRA
levels		(mg/L or ppm)		Levels?	Closure Plan for IX IX Office 40.
			414	The MCL for lead is 15	YES? Under the Safe Drinking Water Act,
Lead, Pb	4 I Total	RFCA Tier 2	Ć.	qdd	15 ppb is the MCL for lead
		Table			CZ
- thum	4 2 Total	7 30E+01	73 000 ppb	NO.	
Magnesium Mg	3090 Total	Not found in	NA	ON.	OZ.
S		RFCA Tier 2			
		l'ibic		Q.	CZ
Manganese Mn	19 0 Total	183E-01	183 ppb	02	VEC
Marcino Ho	0 10 U Total	2 00E-03	2 ppb	NO.	
Merchin 115	0.51	5 00E-03	5 ppb	NO	YES
Methylene cilioriue	21 S Total	183E-01	183 ppb	NO	NO
Molypdennm Mo	111 Total	1 00E-01	100 ppp	ON.	NO
Nickel, Ni	1010 Total	Not found in the	NA	NO	ON.
Potassium, K	1,010 100	RFCA Tier 2			
		Table			
Pridine	70 U	Not on Tier 2	NA	Not on Tier 2 list	YES
		LIST	403	OZ	YES
Selenium Se	1 8 U Total	5 00E-02	ord oc	25	VES
Silver Ag	10 U Total	1 83E-01	183 ppb	ON	
Sodium	7 920 Total	Not found in	NA	02	O.
		RFCA Tier 2			
		Table		92	ON
Strontium Sr	109 Total	2 19E+01	21,900 ppb	02	NEC.
Tetrachlorocthylene	050	5 00E-03	5 ppb	ON	NO
Thelling Ti	2 3 U Total	2 00E-03	2 ppb	ON	021
=1	1 7 I I Total	2 19E+01	21,900 ppb	NO	ON
In Sn	1150	1 00F+00	1000 pap	ON	YES
Toluene	05.0	\$ 00E 03	\$ pob	ON	YES
Trichloroethy lene	0.00	2000	256 pmh	CZ	NO
Vanadıum, V	0 6U Total	2 30E-01	20 ppu	OZ.	YES
Vinyl chloride	0 5U	2 00E-03	7 ppo	ON	VES
Xylenes	0 SU	1 00E+01	10,000 ppb	ON CONTRACT	CIX
71nc 7n	14 1 Total	1 10E+01	11,000 ppb	NO	2
SINC EII					ŧ

SUMP 157
Simple Report Dife 2.22 98
Summinged Tuesdin Africh 24 1998
Ted A Hopkins

Sample from rinsate from B123 Sump 158

SUMP 158

Is the contaminant a "Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA Unit 40? YES YES YES YES YES YES YES 92 S S S YES YES 2 9 YES YES YES YES YES 8 9 Is contaminant present above Tier 2 Action Levels? 일일일 외원 8 **9**9 오 8 9 2 9 9 9 9 2 9 2 2 일 일 일 2 Conversion of Tier 2 Action Levels to ppb 300 ppb 2,190 ppb 700 ppb 27 6 ppb qdd 5 ppb 100 ppb 100 ppp 5 ppb 50 ppb 5 ppb 4 ppb qdd 9 2 000 ppb 100 ppb 200 ppb 3650 ppb 106,000 ppb 2470 ppb 5 ppb 5 ppb qdd AN 100 NA, not on Ticr (mg/L, or ppm) Action Levels Tier 2 RFCA 1 30E+00 2 19E+00 5 00E-03 1 00E-01 7 00E-01 3 65E+00 06E+02 2 00E+00 1 00E-01 5 00E-03 2 76E-02 1 00E-01 2 47E+00 5 00E-02 5 00E-03 1 00E-01 6 00E-03 4 00E-03 2 Table 7 00E-03 5 00E-03 5 00E-03 2 00E-01 0 50 U Total 0 70 U Total 0 + U Total 0 2 U Total 44 Baseline UG/L in sample 6 Baseline 1 4 U Total 1 6 U Total 79 3 Total 20 6 Total 1 1 Total contaminant Contaminant 0 50 2 0 U 0 50 0 SU 050 07 Sample # 98A0996-003 Metals 98A0996-003 018 35Total 050 050 0 50 050 2 U 2 U or ppb Contaminants of concern and any contaminant present above action 2-Butanone (Methyl ethyl ketone) Dibromochloromethane Bromodichloromethane |-|-|-Trichlorocthane 1 2-Trichloroethane Carbon tetrachloride 1 Dichloroethy lene 1-2-Dichloroethanc Carbon disulfide Chlorobenzene Chromium Cr Cadmium Cd Aluminum Al Ethylbenzene Ben Illum Be Antimoni Sb Chloroform Copper, Cu Arsenic As Cobalt Co Barium Ba Iron, Fe Benzene Acetone

Summirized Tuesday March 24 1998 Sample Report Dite 2/25/98 SUMP 158

Ted A Hopkins

		, o nec	Conversion of Ther?	Is contaminant present	Is the contaminant a "Contaminant of
Contaminants of concern and any contaminant present above action	UG/L in sample or ppb	Action Levels	Action Levels to ppb	above Tier 2 Action Loyels?	Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
levels		(mg/L or ppm)			
		Mar Canad on	47	The MCL for lead is 15	YES? Under the Safe Drinking Water Act,
Lead Pb	2 4 Total	RFCA Tier 2		qdd	15 ppb is the MCL for lead
		Table			
	S & Total	7 30E+01	73 000 ppb	NO	ON
Lithium Li	3030 Total	Not found in	NA	02	OZ.
Magnesium Mg		RFCA Ticr 2			
**************************************		Table			Cix
Manage Man	1 6 Total	1 83E-01	183 ppb	000	NEC YES
Manganese iviii	luo U Join	2 00E-03	2 ppb	ON	1ES
Mercun 11g	0.511	5 (10E-0)3	, ppb	ON	153
Methy lene chiloride	10 5 Total	1 X3F-01	183 ppb	NO	NO
Molybdenum Mo	10 L 11 07 0	1005-01	100 ppp	ON	ON
Nickel Ni	0.00 0.1001	Also fermed on the	A Z	OZ.	ON
Potassium k	1 050 Total	DECA Tier?			
		Krca 101 4 7041			
			*13	Not on Tier 2 list	YES
Pyridine	70 U	Not on Tier 2	۲ ۲		
		List		02	YES
Calamin Co	1 8 U Total	5 00E-02	30 ppp	01	VEC
Selemum, Sc	10 [1 Total	1 83E-01	183 ppb	ON	153
Silver Ag	7 100 Total	Not found in	NA	ON	22
Sodium	/,+30 1 Otal	RFCA Tier 2			
		Table			
	107 Total	2 19E+01	21 900 ppb	NO NO	NO E
Strontium, Sr	0.51	5 00E-03	5 ppb	ON	TES
Tetrachioroethy tene	2 2 11 Total	2 00F-03	2 ppb	ON	NO
Thallium, Tl	2.3.0.1.0181	2 10E+01	21 900 ppb	ON	NO
Tin, Sn	+ / 10lai	0013001	1000 nah	ON	YES
Toluene	80	1 005-700	200 0001	CZ	YES
Trichloroethylene	0 50	5 00E-03	2 ppo	02	ON
V	0 6U Total	2 56E-01	256 ppo	Si.	VEC
Vanadium V	0 50	2 00E-03	2 ppb	02	ST.
VINVI Chioriae	0.7	1 00E+01	10,000 ppb	NO	153
Xylenes	13 Total	1 10E+01	11,000 ppb	ON	L NO
Zinc Zn					7

SUMP 158
Sample Report Date 2/25/48
Summanzed Tuesdin March 24 1998
Ted A Hopkins

APO SAMPLE RECEIPT

This sample receipt is supplied to waste generators as notification of sample collection. Inquiries into the status of this sample may be directed to the Analytical Projects Office (APO) by calling 966-2403, 966-7789, or 966-3771 The APO references samples by the following identification numbers

98A0996 RIN APO Event 98A0996-001 Duplicate ID Issue Date 02/03/98

Waste Stream ID Customer Sample ID SUMP 156 Field Blank ID Equipment Blank ID Trip Blank ID

6047

004-02

004 02

Sample Description FINAL RCRA RINSATE FROM/123 Other Id Sample Location BLDG 123, ROOM 156 V

Baseline Printing 9840296-004011 004-02 RELATION 004-02 Bottle ID Analyses Requested: TULL AQUEOUS RADSCREEN - DOT 98A0996-001 001 559 GROSS ALPHA/BETA - NO RAD ADDED (WASTE) 98A0996-001 001 98A0996-001 002 GROSS ALPHA/BETA - NO RAD ADDED (WASTE)
FINGERPRINT (559)

SW-846 8260 (Water, Aqueous Waste)
SW-846 8270B (TCLP Extracts)
TOTAL METALS SW-846 (HG)
AQUEOUS RADSCREEN - DOT
GROSS ALPHA/BETA - NO RAD ADDED (WASTE)
FINGERPRINT (559)
SW-846 8260 (Water, Aqueous Waste)
SW-846 8270B (TCLP Extracts)
TOTAL METALS SW-846 (HG)
AQUEOUS RADSCREEN - DOT
GROSS ALPHA/BETA - NO RAD ADDED (WASTE)
FINGERPRINT (559)

P) FINGERPRINT (559) ECRU 98A0996-001 003 98A0996-001 004 98A0996-001 005 98A0996-001 006 98A0996-002 007 98A0996-002 007 98A0996-002 008 98A0996-002 009 98A0996-002 010 98A0996-002 011 98A0996-002 012 98A0996-003 013 98A0996-003 013 FINGERPRINT (559)
SW-846 8260 (Water, Aqueous Waste)
SW-846 8260 (Water, Aqueous Waste)
SW-846 8270B (TCLP Extracts)
TOTAL METALS SW-846 (HG) 98A0996-003 014 98A0996-003 015 98A0996-003 016 98A0996-003 017 98A0996-003 018 Date Sampled Phone Pager Process Contact M. AYCOCK
Alternate Contact P. VALENTINELLI 5309 7508

Returning Excess Sample Material

Unmodified sample material remaining after analysis is generally returned to Unmodified sample material remaining after analysis is generally returned to the generator. The generator must be prepared to receive and dispose of excess sample material for applicable state and federal regulations. Regulatory exclusions for returning excess sample material are specified in the Code of Colorado Regulations (CCR) 1007-3, Part 261 4(d) 'Samples' If problems with the disposal of excess sample material are encountered, the Environmental Coordinator for the generation area should be contacted for resolution of the issues. Only sample material which has not been modified during analysis will be returned. Material which has been accidified for preservation purposed will not be returned. preservation purposed will not be returned

INTER-DEPARTMENT DELIVERY

Deliver To Building

Organization

Date 02/03/98

Page 4

Thermo NUtech-Rocky Flats RFEIS, Building T8860 Golden, Colorado 80402 (303)966-6860

RIN: 9840996 Report Date: 02/25/98

Sample and Duplicate Analysis Results

			Gross Alpha			Gross Beta]	
Customer Sample ID	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	QC Batch
98A0996-001 001	98020069-01	07	0.6	13	0.7	0.9	2.2	рСИ	98AB028
98A0996-002.007	98020069-02	80	06	13	15	09	2.1	pCvf	98AB026
98A0996-003,013	98020069-03	0.6	0.8	14	16	0.9	2.1	рСИ	98AB026
98A0996-004 019	98020069-04	0.9	04	14	13	0.7	2.2	рСИ	98AB026
98A0996-004 019	98020069-08 D	0.7	0.6	14	05	10	2.2	pCi/i	98AB026

GENERAL LABORATORY 881

Preparation Blank Results

		(Proce Alpha	1		Gross Betz		
QC Batch	Lab Sample iD	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units
98AB026	98020069-09	-0.1	0.5	12	0,6	0.9	2.2	pCvI

LCS Results

		(ross Alpha	1		Gross Beta)		1
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	SRM
98AB026	98020069-10	24.4	3.5	5.1	24 6	3.7	6.9	pCN	SAB_CTRL10

Thermo NUlech - Rocky Flats RFETS, Building T886D Golden, Colorado 80402-(303) 966-6960

RIN 98A0996 Report Date: 02/25/98

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activities in a low background, thin-windowed, gas flow proportional counter. Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. Analysis of aqueous samples and prepared non-aqueous samples is described in detail in Rocky Flats Procedure, L-6240, "Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples"

Preparation of oils, solvents and other combustible organics is described in L-6194, "Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity". The counting procedure is described in procedure L-6295, "Operation of the Tennelec LB4100 Gas Proportional Counters".

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg). Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves. These standards are prepared from certified reference material which is traceable to the National institute of Standards Technology (NIST)

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported result is based on the average of two or more counts, the average MDA is reported.

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank. Each set of samples forms a "QC Batch" and is assigned a QC batch number. A sample can be traced back to its corresponding quality control samples through the QC Batch number. The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis. The activities reported for samples and standards were not corrected for preparation blank activity. The alpha and beta laboratory control samples are aqueous standards of ²⁴¹Am and ⁵⁰Sr, respectively. The SRM standards used to prepared these standards are traceable to NIST. The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carried through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts. The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed. A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package.

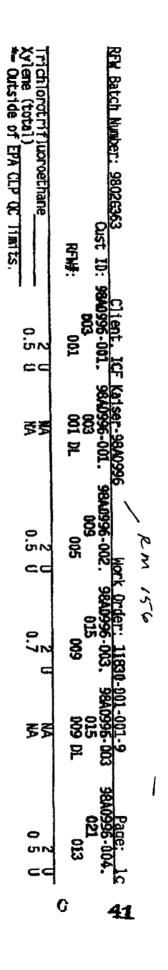
Narrative

These samples were submitted for radscreen analysis and analysis of gross alpha/gross beta activity for No-Rad-Added assessment. The radscreen analyses were done according to procedure L-6278, "Sample Preparation for Radiological Screening by Gas Proportional Counting" in QQ batch 98RS038. The gross alpha/gross beta analyses were done using procedure L-6240, "Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples" incorporating the quality control requirements of procedure L-6194 "Preparation of Pils and Solvents for Analysis of Gross Alpha and Gross Beta Activity" in order to comply with the No-Rad-Added program quality requirements. The gross alpha/gross beta analyses were done in QC batch 98AB026. This batch also included a sample from RIN 98A0997. The first time the planchets were counted, the alpha counts of the two planchets prepared for sample 98020069-04 were statistically different (2\top). These two planchets were recounted and again the alpha counts of the two planchets were statistically different. However, planchet "A" initially counted higher than "B" and in the recount, the "A" planchet counted lower than the "B" planchet. All four alpha activities measured for this sample are less than the MDAs for the measurements and are equivalent when all sources of measurement uncertainty are propagated. The average activities and MDAs and propagated uncertainties of the four measurements (two counts of two planchets) are reported for sample 98020069-04. Sample 98020069-04 was also used for the lab duplicate (98020069-08). The average alpha activity for sample 98020069-04 is in good agreement with the lab duplicate alpha activity. There were no other problems noted in these analyses and all QC data for the batch are acceptable.

0009

MI - LIMINA			
53			
Dichlorodifluoro Chloromethane Chloromethane Yinyl chlorofluorom 1,1-Dichlorofluorom 1,1-Dichlorofluorom 1,1-Dichlorometha 2,2-Dichlorometha 2,2-Dichlorometha 2,2-Dichlorometha 2,2-Dichlorometha 2,1-Dichlorometha 2,2-Dichlorometha 2,2-Dichlorometha 2,1-Dichlorometha 2,2-Dichlorometha 2,2-Dichlorometha 2,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,1-Trichlorome 1,1,2-Trichlorome 1,1,2-Trichlorome 1,1,2-Trichlorome 1,1,2-Trichlorome 1,1,2-Trichlorome 1,1,2-Trichloroethane 1,1,2-Trichlorome 1,1,2-Trichlorome 1,1,2-Trichloroethane 1,1,2-Trichlorome	Surrogate	REW Batch Nu Sample Information	
ethane re re re re ane ane where ride ride thane ethane ethane ethane	4-Bromof Juorobenzene Toluene-d8 1.2-Dichloroethane-d4	Cust ID: REW#: Matrix: Onts:	
	103 104 93	9640996-00 003 001 WATER	
######################################	204 26 24		2
55555555555555555555555555555555555555	110 **	9840996-001. 9 9840996-001. 9 9003 DL WATER 5	Recra LabNet METHOD 8260 W
	125 255 244 244	Shappe 157 98A0996-002. 009 005 WATER 1 UG/L	Chicago OLATILES Wor
	104	9880996-003 015 009 WATER 1 UG/L	k Order: 11830.
**************************************	109	9840996-003. 0115 009 DL WATER 5 UG/L	Report Date: (
	103 **	98 A0996 -004. 021 021 013 WATER 1 U6/L)2/24/98 09:09 Page, la

1.3-Dichloropropane Dibromochloromethane 1.1.1.2-Tetrachloroethane 1.1.1.2-Tetrachloroethane Chlorobenzene Bromobenzene Bromobenzene 1.2.3-Trichloropropane 1.2.3-Trichloropropane 1.3.5-Trimethylbenzene 1.3.5-Trimethylbenzene 1.3-Dichlorobenzene 1.3-Dichlorobenzene 1.3-Dichlorobenzene 1.2-Dibromo-3-chloropropane 1.2-Dibromo-3-chloropropane 1.2-Dibromo-3-chloropropane 1.2-Trichlorobenzene 1.2-Butylbenzene 1.2-Trichlorobenzene 1.2-Trichlorobenzene 1.2-Trichlorobenzene 1.2-Butylbenzene 1.2-Butylbenzene 2-Butylbenzene 2-Butylbenzene 2-Butylbenzene 2-Butylbenzene 2-Hexachlorobenzene 2-Hexachlorobenzene	RFW Batch Number 98026363 Cust ID: 980
	Client. ICE 98A0996-001. 003
**********************	Kaiser-98A099 98A0996-001. 003 001 DL
CCEEEECCCCCEEECCCECECECCCCCCCCCCCCCCC	6 Wor 9840996-002. 009 005
	156 bork Order: 11830 2. 9840996-003. 009
**************************************	-001-001-9 98A0996-063. 015 009 DL
 	Page 1b 98A0996-004. 021



Information A-Bromofluorobenzene Surrogate Recovery A-Bromofluorobenzene Surrogate Recovery 1,2-Dichlorodifluoromethane Chloroethane Chloroethane I-Dichloroethane I-Dichloroethane 2,2-Dichloroethane 2,2-Dichloroethane 2,1-Dichloroethane 2,1-Dichloroethane 2,1-Dichloroethane 2,1-Dichloroethane 2,1-Dichloroethane 2,1-Dichloroethane 1,1-Trichloroethane 1,1-Trichloroethane 1,1-Trichloroethane 1,1-Trichloroethane 1,2-Dichloropropane 1,2-Dichloropropane 1,2-Dichloropropane 1,1-Trichloroethane 1,2-Dichloropropane 1,2-Dichloropropane 1,2-Dichloropropane 1,2-Dichloropropane 1,2-Dichloropropane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Trichloroethane 1,1-Trichloroethane	RFW Batch Number. 98026363 Cust IO:
Timits SERVING	*Client: ICE 34,5096-004.
986ALES-1100 000000000000000000000000000000000	Recra LabNet METHOD 8260 Kaiser-98A0996 YBLKDA
986VF055-180 WATER 103 103 103 103 103 103 103 103 103 103	VOLATILES VBLKDA BS
986VF057-18 MATER 100 100 100 100 100 100 100 100	Work Order: 1183
282988833223889888892988832 282988833223889888832988832 282988833223889888832	Report Date: [0-001-001-9 VBLKCQ &S
26 24 24 24 25 25 25 25 26 26 26 26 26 26 26 26 26 26 26 26 26	: 02/24/98 09:09 Page. 2a
	QC 42

Dibromoch loromethane 1,2-Dibromochane 1,1-1,2-Tetrach loroethane 1,1-1,2-Tetrach loroethane 1,1-1,2-Tetrach loroethane 1,2-Tetrach loroethane NA Styrene NA	スーガでfiloropropane RFH号・ 013	RFW Batch Number: 9802G363 Client Cust ID: 98N0996-
	DL. 98GWF055-M81 98GWF055-M81	L ICE Karisser 9840996 WOLKDA BS
	7-NB1 98GVF	VBLXXXX 11830-001-001-9
	20	Page: 2b. 43

Client: ICF Kaiser-98A0996 Work Order: 11830-001-201-9 Cust ID: 98A0996-004. WBLKDA WBLKDA BS VBLKCQ VBLKCQ BS RFN#: 813 DL 98GYF055-MB1 98GYF055-MB1 98GYF057-MB1 98GYF057-MB1 NA 2 U 2 U 2 U 2 U 2 U 7 U 7 U 7 U 7 U 7 U
98A0996 WBLKDA BS VBLI WBLKDA BS VBLI 95-MB1 98GVF055-MB1 99GI 2 U 2 U 1.5 U 92 %
WELLOW BS ABIT AND A SECOND SE
VBLKCQ VBLCQ VBLKCQ VBLKCQ VBLCQ VBLKCQ VBLKCQ VBLCQ VBLKCQ VBLCQ VBLKCQ VBLCQ VB
98GVFT
01-9 0 85 2 U 96 %
9.7 44

REW Batch Number: 98026363 Clant ICF Katser-980996-001. 980996-001. 980996-001. 980996-001. 980996-001. 980996-001. 980996-001. 980996-002. 980996-002. 980996-003. 98096-003. 980996-003.	33			
Recta LabNet - Chicago SEMIVOLATILES BY GC/NS. TCLP LEACHATE Client IGE Kaiser-98A0996 Page: North Jisto 105	ine ine inchior in the parameter in the	Surrogate Recovery	Sample Information	RFW Batch Nu
Recra LabNet - Chicago IVOLATILES BY GC/NS. TCLP LEACHATE CF Kaiser-98A6996 -001. 98A0996-002. 98A0996-003. 98A0996-004. SBLKIX -005 -011 -007 -011 -007 -013 -023 -035 -010 -007 -011 -013 -035 -014 -023 -035 -014 -023 -035 -014 -023 -035 -017 -017 -013 -035 -014 -023 -035 -017 -017 -013 -035 -044 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	ine ieno] ieno]	2-Fluorophenol Phenol-d5 Nitrobenzene-d5 Nitrobenzene-d5 2-Fluorobiphenyl 2.4,6-Tribromophenol p-Terphenyl-d14	Raturix. D.F.: Units:	Mber: 98026363
Net - Chicago GC/NS. TCLP LEACHATE REPORT Date: 03/04/98 14: 966 / North Order: 11830-801-09		988837 ******	005 003 WATER 1 ug/L	SEMIN Client. ICE 5074 1576 98A0996-001.
Cago Cago Date: 03/04/98 14: Hork Order: 11830-001-001-9 Page: 15-6-002. 98A996-003. 98A996-004. SBLKHX Cago Date: 03/04/98 14: Page: 15-7 Date: 03/04/98 14: Page: 03/04/98 14:		582861 888888	005 003 MS WATER 1 ug/L	Recra LabNe OLATILES BY GO Katser-98A099
Report Date: 03/04/98 14: 11830-001-901-9 Page: 6-003. 98A0996-004. SBLKHX 023 011 023 013 023 014 015 98A0996-004. SBLKHX 023 024 025 025 026 027 027 027 027 028 028 029 029 029 029 029 029 020 029 029 029		%E&B&R	011 007 WATER 1 ug/L	황지 유민
Mate: 03/04/98 14: 9 Page: 9 Page: 004. SBLKHX 004. SBLKHX 004. SBLKHX 0056-MB WATER 1	:			HATE k Order: 11830 Sump 155 9840996-003.
600244084708557 60024084708557		57 72 94 8 8 8 8 8	023 015 WATER 1 ug/t	Report Date: 1-101-001-9 1-8-5-1-001-9 98-009-6-004.
			.	03/04/98 14:02 Page: 1a SBLKHX

2-Fluorophenol 85 x 70 x 68 x Phanol-d5 99 x 75 x 74 x Nitrobenzene-d5 100 x 86 x 77 x 2-Fluorobiphenyl 96 x 86 x 76 x 2-Libromophenol 71 x 56 x 60 x p-Terphenyl-d14 104 x 102 x 97 x	RFW#· 98GB0056-MB1 98GB0056-TC1 98GB0056-TC2 98GB00 Matrix WATER WATER WATER W D F., I 1 1 1 1 Units: ug/L ug/L ug/L	Cust ID: SBLKHX BS SBLKHY SBLKHZ SBLKIJ	Recra LabNet - Chicago SEMIVOLATILES BY GC/MS, TCLP LEACHATE RFW Batch Number: 9802G363 Client: ICF Kaiser-98A0996 Work Order
886875 * *	•		EN INC
	98GB0056-TC1 WATER 1 ug/L	BLICHY	Recra Labke ATTLES BY GC (atser-98A099
	98GB0056-TC2 WATER 1 ug/L	SBLKHZ	HS, TCLP LI
588888 *****	98G80056+TC3 WATER 1 ug/L	SBLKIA	HATE
			Report Date: 03/04/5
	2-Filiaropheno) 85 % 70 % 68 % Phanol-d5 99 * % 75 % 74 % 1trobenzene-d5 100 % 86 % 77 % 1iaorobipheny) 96 % 86 % 76 % 1ribromopheno) 71 % 56 % 60 % 102 % 97 % 102 % 97 % 102 % 97 % 102 % 97 % 102 % 102 % 97 % 102 %	RFW#- 98680056-MB1 98G80056-TC1 98G80056-TC2 98G80056-TC Matrix NATER WATER WATER WATER WATER D F 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Cust ID: SBLKHX BS SBLKHY SBLKHZ SBLKIA RFW#- 986B0056-MB1 98GB0056-TC1 98GB0056-TC2 98GB0056-TC Matrix NATER WATER WATER WATER WATER Units: ug/L ug/L ug/L ug/L ug/L 2-Fluoropheno! 85 % 75 % 74 % 82 Pheno!-d5 99 * % 75 % 77 % 88 Tucorobipheny! 96 % 86 % 76 % 89 Tucorobipheny! 96 % 86 % 76 % 89 Terpheny!-d14 104 % 102 % 97 % 102

RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0996 WORK ORDER. 11830-001-001-9999-00

RECRA LOT #: 9802G363

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-004	98A0996-001.006	Silver, Total	_10.0 u	UG/L	10.0
	5 ung 156	Aluminum. Total	132	UG/L	13.1
l l	1 1	Arsenic, Total Barium, Total	1.6 u 21.9	UG/L UG/L	1.6
	i i	Beryllium, Total	0.20 u	UG/L	0 20 0 20
	. .	Calcium, Total	13500	UG/L	7.6
	1	Cadmium, Total	0 40 µ	UG/L	0.40
1	_	Cobalt, Total	0.50 u		0,50
	1	Chromium, Total	0.51	UG/L	0 40
Ì	1	Copper, Total	Q.70 u		0.70
	ł	Iron, Total	59.7	UG/L	16 9
	1	Mercury, Total	0.10 u		0.10
		Potassium, Total	1000	UG/L	7 4
ļ		Lithium, Total	4.7	UG/L	1.3
		Magnesium, Total	3200	UG/L	7.6
·	1	Manganese, Total	2.0	UG/L	0.50
		Molybdenum. Total	21.5	UG/L	0.50
	i	Sodium, Total Nickel, Total	7510 0,60 u	UG/L UG/L	177
		Lead. Total	4.0	UG/L	0 60 1 2
	į	Antimony. Total	3 1	ŬĞ/L	1 4
		Selenium. Total	1 8 u		า
		Tin, Total	10 4	ŬĞ/L	1 2 1 4 1 8 1 7
£.		Strontium, Total	114	ŬĠ/Ĺ	ō 20
₹		Thallium, Total	2.3 u	UG/L	2 3
		<u>Vanadium, Total</u>	0 60 u	UG/L	0 60
		Zinc, Total	9.6	UG/L	0 60

RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0996 — WORK ORDER: 11830-001-001-9999-00

RECRA LOT #: 9802G363

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-008	98A0996-002.012 Sump 157	Silver. Total Aluminum. Total	10.0 u 138	UG/L UG/L	10.0 13.1
1 1	1	Arsenic, Total Barium. Total	1.6 u 21.9	UG/L UG/L	1.6
		Beryllium, Total	0.20 u	UG/L	0.20
		Calcium, Total	13200	UG/L	7.6
1	1	Cadmium, Total Cobalt, Total	3 1 0.50 น	UG/L UG/L	10 40 0.50
1		Chromium, Total	13.2	UG/L	0.40
		Copper, Total Iron, Total	4.8 152	UG/L UG/L	0.7 0 16.9
		Mercury, Total	0.10 u	UG/L	0.10
		Potassium, Total Lithium, Total	1010 4.2	UG/L UG/L	7.4 1.3
		Magnesium, Total	3090	UG/L	7.6
		Manganese, Total	19 0	UG/L	0. 50
		Molybdenum, Total Sodium, Total	20.9 7920	UG/L UG/L	0.50 177
		Nickei. Total	111	UG/L	0.60
		Lead, Total	4.1	UG/L	1 2
		Antimony, Total Selenium, Total	1.4 u 1.8 u	UG/L UG/L	1.4
		Tin, Total	17 u	UG/L	1.7
		Strontium, Total Thallium, Total	109 23 u	UG/L UG/L	0 20 2 3
		Vanadium, Total	0.60 u	UG/L	(0.60
	1	Zinc, Total	14.1	UG/L	0 60



RECRA LABNFT - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0996 -- WORK ORDER: 11830-001-001-9999-00

RECRA LOT #: 9802G363

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-012	98A0996-003.018 ミャット) 5 8	Silver, Total Aluminum, Total Arsenic, Total Barium, Total Beryllium, Total Calcium, Total Cadmium, Total Cobalt, Total Chromium, Total Chromium, Total Copper. Total Iron, Total Mercury, Total Potassium, Total Hagnesium, Total Manganese, Total Manganese, Total Molybdenum, Total Sodium, Total Nickel, Total Lead, Total Antimony, Total Selenium, Total Tin, Total Strontium, Total Thallium, Total	10.0 u 135 1.6 u 20.6 0.20 u 12600 0.40 u 0.50 u 1.1 0.70 u 79.3 0.10 u 1030 5.6 3030 1.6 20.5 7490 0.60 u 2.4 1.4 u 1.8 u 4.7 107 2.3 u	UG/L UG/L UG/L UG/L UG/L UG/L	10.0 13.1 1.6 0.20 7.6 0.40 0.50 0.70 16.9 0.10 7.4 1.3 7.6 0.50 0.50 177 0.50 1.4 1.8 1.7 0.20 2.3
		Vanadium, Total Zinc, Total	0.60 u 4.3	UG/L UG/L	0.60 0.60

RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT. ICF Kaiser-98A0996 — WORK ORDER: 11830-001-001-9999-00

RECRA LOT #. 9802G363

SAMPLE	SITE ID	ANALYTE .	RESULT	UNITS	REPORTING LIMIT
-016	98A0996-004.024 Baseline	Silver. Total Aluminum, Total	10 0 u 137	UG/L UG/L	10.0 13.1
	600×11-60	Arsenic, Total Barium, Total	1.6 u 22,2	UG/L UG/L	1 6 0.20
		Beryllium, Total	์นี้20 น	UG/L	0.20
		Calcium, Total	13206	UG/L	76
1		Cadmium, Total	40 u	UG/L	0.40 1
		Cobalt, Total	0 ₃ 50 u	UG/L	0.50
		Chrondum, Total	0 41	UG/L	0.40
		Copper, Total	0 70 u	UG/L	0.70
		Iron. Total	38 5	UG/L	16.9
		Mercury, Total	0.10 u 972	UG/L UG/L	0 10 7 4
		Potassium, Total Lithium, Total	4.9	UG/L	1.3
		Magnesium, Total	3180	ŬĞ/L	7.6
		Manganese, (Total	1 3	ŬĜ/L	0. 50
		Molybdenum Total	1.3 21.6	ŬĠ/L	0.50
		Sodium, Total	7290	ŬĜ/L	177
		Nickel, Total	0.60 u	UG/L	0.60
		Lead, Total	2.1	UG/L	1 2
		Antimony, Total	2,2	ug/l	1 4 1 8
		Selenium, Total	2.1 2.2 2.2 2.1.7 u	UG/L	18
		Tin, Total	1.7 u	UG/L	1.7
		Strontium, Total	112	UG/L	0.20
		Thallium, Total	2 3 u	UG/L	2 3
		Vanadium. Total	0.60 u	UG/L	0,60
		Zinc. Total	64	UG/L	0 60



WASTE CHARACTERISTICS REPORT

Case Namative for Fingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories

RF Sample ID:

98A0996-001.002

Lab Code: 559 RIL

Lab Sample ID:

98A0998-001.002

BIN:

98A0996-001.002

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SSO8-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Minifiash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Minifiash method with the approved Satafiash method. This method has been approved by the APO on 6/19/1997.

Case Narrative:

On February B, 1998 this Sump sample was received in the 559 Laboratory. All OC was within limits. There were no anomalies during analysis.

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Redicenslytical Laboratories

RF Sample ID:

98A0996-001,002

Lab Coder 559 RIL

Lab Sample ID:

98A0996-001.002

Date of Analysis: Feb 10 1898

RIN:

98A0996-001.002

			Quali	fiers	
Parameter ID	Parameter Name	Result	С	α	Units
	Physical Appearance	Single phase, transparent, colorless, non-viscous liquid.			NA
	Water Test	Positive			NA
10-29-7	pH	5			S. U.
	Specific Gravity	0.9963			•1
	Mackie with	Water			NA
	Reactivity with Water	No			NA
RFS-FP-97	Flash Point	NA, Aquecus Sample			degrees C
	Chlorinated Solvents	NA, Aqueous Sample			ppm

Notes:

NA - Not Applicable

*1 - relative to water @ 20 C

Approval: Jour & Newsleys
Peer Review: Jon R. Washa

WASTE CHARACTERISTICS REPORT

Case Narrative for Pingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories

RF Semple ID:

98A0996-002,008

Lab Code: 559 RIL

Lab Sample ID:

98A0996-002.008

RINI

98A0996-002.008

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SSO8-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Minifiash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Minifiash method with the approved Setaflash method. This method has been approved by the APO on 6/19/1997.

Case Nametive:

On February 9, 1998 this Sump sample was received in the 559 Laboratory. All QC was within limits. There were no enomalies during englysis.

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Radioanalytical Laboratories

RF Sample ID:

800.S00-9660A86

Lab Code: 559 RIL

Lab Sample ID:

98A0996-002.008

Date of Analysis: Feb 10 1998

RIN:

98A0996-002 008

			Qualit	iors	
Parameter ID	Parameter Name	Result	С	Q	Units
	Physical Appearance	Single phase, transparent, coloriess, non-viscous liquid.			NA
	Water Test	Pošítive			NA
10-29-7	рН	5	Halling on Co.		5. U.
	Specific Gravity	0.9999			*1
	Miscible with	Water			NA
	Reactivity with Water	No			NA
RFS-FP-97	Flash Point	NA, Aqueous Sample			degrees (
	Chiorinated Solvents	NA, Aqueous Sample		***************************************	ppm

Notes:

NA - Not Applicable

*1 - relative to water @ 20 C

Approval²

Peer Review. Son R. Weiss

TED 11-00 WED 14-10 OF THE UNITED AND COURSE OF THE UNITED AND THE

WASTE CHARACTERISTICS REPORT

Case Narrative for Fingerprint Analysis

Leb Name: 559 Redioanalytical Laboratories

RF Sample ID:

98A0996-004,020

1.00

r. 11

Lab Code: 559 RIL

Lab Sample ID:

98A0996-004-020

REN

98A0996-004.020

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Minifiesh instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Minifiesh method with the approved Setaffash method. This method has been approved by the APO on 6/19/1997.

Case Nametive:

On February 9, 1995 this Sump sample was received in the 559 Laboratory. All QC was with limits. There were no anomalies during analysis.

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Radioanalytical Laboratories

RF Sample ID:

9840996-004,020

Lab Code: 559 RtL

Lab Sample ID:

9BA0996-004.020

Date of Analysis: Feb 10 1998

RIN!

9840996-004.020

			Oneali	flers	
Paremeter ID	Parameter Name	Result	С	Ω	Units
	Physical Appearance	Single phase, transperent, coloriess, non-viscous liquid.			NA
	Water Test	Positive			NA
10-29-7	ρH	5			S. U.
<u>i</u>	Specific Gravity	1.0044			71
	Miscible with	Water			NA
	Reactivity with Water	No			NA
RF8-FP-97	Flash Point	NA, Aqueous Sample			degrees
	Chlorinated Solvents	NA, Aqueopa Sample			ppm

Notes:

NA - Not Applicable

*1 - relative to water @ 20 C

Approval: __

Peer Review;

WASTE CHARACTERISTICS REPORT

Case Nametive for Pingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories

RF Sample ID:

98A0998-003.014

Lab Code: 559 RIL

Lab Sample ID:

98A0996-003.014

RIN:

88A0996-003.014

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module \$508-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261-21. A Minifiash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Minifiash method with the approved Setaffash method. This method has been approved by the APO on 6/19/1997.

Case Nerretive:

On February 9, 1998 this Sump sample was received in the 559 Laboratory. All OC was within firnits. There were no anomalies during analysis.

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Redicanalytical Laboratories

RF Sample ID:

98A0996-003.014

Lab Code: 569 RIL

Lab Sample ID:

98A0998-003,014

Date of Analysis: Feb 10 1998

1998

RIN:

9BA0996-003.014

		_	Qualit	iers	
Parameter ID	Parameter Name	Result	C	a	Units
	Physical Appearance	Single phase, transparent, coloness, non-viscous liquid.			NA
	Water Test	Positive			NA
10-29-7	pH	5			e, u,
	Specific Gravity	0.9990			*1
	Miscible with	Water			NA
	Floactivity with Water	No			NA
RF\$-FP-97	Fleeh Point	NA, Aqueous Sample			degress C
	Chlorinated Solvents	NA. Aqueous Sample			ppm

Notes:

NA - Not Applicable

*1 - relative to water @ 20 C

Approval

Peer Review:

Appendix C - Analytical Results for the Sump in Room 125

Sample from rinsate from B123 Sump in Room #125
125 SUMP
Sample # 98A1028

Sample # 70A1020		Thursd DECA	Consideration of Tion ?	Is confaminant present	Is the contaminant a "Contaminant of
Contaminant present above action	or ppb	Action Levels	Action Levels to pph	above Tier 2 Action	Concern" as identified in the RCRA
levels		(mg/L or ppm)		Levels?	Closure Plan for RCRA Unit 40?
1 Dechloradia lone	0.511	7 00F-03	7 nph	ON	YES
1 2-Trichlorocitians	0 5 U	5 00E-03	5 ppb	NO	YES
1-1-1-Trichloroethane	0 5U	2 00E-01	200 ppb	ON	YES
1-2-Dichlorocthane	US 0	5 00E-03	5 ppb	NO	YES
2-Butanone (Methyl ethyl ketone)	2.0	2 47E+00	2470 ppb	NO	YES
Acetone	27	3 65E+00	3650 ppb	NO	YES
Aluminum, Al	N 001	1 06E+02	106,000 ppb	NO	NO
Antimony, Sb	20 U	6 00E-03	9 ddd	NO	NO
Arsenic, As	50 U	5 00E-02	50 ppb	NO	YES
Banum, Ba	25	2 00E+00	2,000 ppb	NO	YES
Benzene	U \$ 0	5 00E-03	qdd s	NO	YES
Ben Ilium, Be	2 5 U	4 00E-03	4 ppb	NO	NO
Bromodichloromethane	7	1 00E-01	100 ppb	NO	NO
Cadmium, Cd	5 U	\$ 00E-03	5 ppb	NO	YES
Carbon disulfide	2 0 U	2 76E-02	27 6 ppb	NO	YES
Carbon tetrachloride	0 SU	5 00E-03	ddd 3	NO	YES
Chlorobenzene	O S U	10-300 1	100 ppb	NO	YES
Chloroform	19	1 00E-01	100 ppb	NO	YES
Chromium, Cr	U 01	1 00E-01	100 ppb	NO	YES
Cobalt, Co	10 U	2 19E+00	2,190 ppb	NO	NO
Copper. Cu	12	1 30E+00	1,300 ppb	NO	NO
Ethylbenzene	0 SU	7 00E-01	700 ppb	NO	YES
Iron, Fe	190	NA, not on Tier 2 Table		ON	
	**	Not found in	NA	The MCL for lead is 15	
**************************************	3	RFCA Tier 2		ppt.	Act, 15 ppb is the MCL for lead.

Sump 125 Building 123 Rinsate Sample Sampled 3 10/98
Summarized Monday March 23 1998
Ted A Hopkins

Contaminants of concern and any	UG/L in sample	Tier 2 RFCA	Conversion of Tier 2	Is contaminant present	Is the contaminant a "Contaminant of
contaminant present above action	or ppb	Action Levels	Action Levels to ppb	above Tier 2 Action	Concern" as identified in the RCRA Closure Plan for RCRA Unit 40?
Lathum La	SU	7 30E+01	73,000 ppb	NO	NO
Magnesium, Mg	3500	Not found in RFCA Tier 2 Table	٩٧	NO	NO
Manganese Mn	5 U	1 83E-01	183 ppb	NO	NO
Mercun Hg	020	2 00E-03	2 ppb	NO	YES
Methy lene chloride	0 SU	5 00E-03	5 ppb	NO	YES
Molybdenum Mo	S0 U	1 83E-01	183 ppb	NO	NO
Nickel Ni	10 O	1 00E-01	100 ppb	NO	NO
Potassium K	1 100	Not found in the	NA	00	ON
		RFCA Tier 2 Table			
P ₁ ridine	70 U	Not on Tier 2	A'N	NA, not on Tier 2 list	YES
Soloniim So	11 05	5 00E-02	50 ppb	NO	YES
Silver Ao	5.0	1 83E-01	183 ppb	NO	YES
Sodium	001 8	Not found in	NA	NO	ON
		RFCA Tier 2			
Strontium Sr	120	2 19E+01	21 900 ppb	NO	NO
Tetrachloroethy lene	050	5 00E-03	5 ppb	NO	YES
Thallium Ti	250 U	2 00E-03	2 ppb	NO	NO
Tin Sn	S0 U	2 19E+01	21 900 ppb	QN ON	ON
Tolucne	US 0	1 00E+00	1000 ppb	NO	YES
Trichloroethylene	05.0	5 00E-03	5 ppb	NO	YES
Vanadium, V	s U	2 56E-01	256 ppb	NO NO	ON
Vinvi chloride	US 0	2 00E-03	2 ppb	NO	YES
Xylenes	0 SU	1 00E+01	10,000 ppb	NO	YES
Zinc. Zn	28	1 10E+01	11,000 ppb	NO	NO

Sump 125 Building 123 Rinsate Sample Sampled 3/10,98 Summinzed Mondin Mirch 23 1998 Ted A Hopkins

Need

APO SAMPLE RECEIPT

This sample receipt is supplied to waste generators as notification of sample collection. Inquiries into the status of this sample may be directed to the Analytical Projects Office (APO) by calling 966-2403, 966-7789, or 966-3771. The APO references samples by the following identification numbers.

RIN **98A1028** vent 98A1028-001 APO Event Duplicate ID

Waste Stream ID 123-0-0 Customer Sample ID SAMPLE 1 Field Blank ID

Issue Date 02/09/98

Equipment Blank ID Trip Blank ID.

Sample Description BLDG 123 SUMP Other Id RCRA SAMPLE Sample Location BLDG 123, ROOM 125

Analyses Requested:

Bottle ID

AQUEOUS RADSCREEN - DOT GROSS ALDHA/BETA (AQUEOUS)
FINGERPRINT (559)
SW-846 8260 (Water, Aqueous Waste)
SW-846 8260 (Water, Aqueous Waste)
SW-846 8270B (TCLP Extracts)
TOTAL METALS SW-846 (HG)

98A1028-001 0017NU 98A1028-001 001559 98A1028-001 002559 98A1028-001 002 98A1028-001 003 98A1028-001 004 98A1028-001 005 98A1028-001 006 PWRE

Date Sampled. Process Contact MARY AYCOCK
Alternate Contact. P. VALENTINELLI Phone 5309 6047

Pager 7508

Returning Excess Sample Material

Unmodified sample material remaining after analysis is generally returned to the generator The generator must be prepared to receive and dispose of excess sample material for applicable state and federal regulations
Regulatory exclusions for returning excess sample material are specified in the
Code of Colorado Regulations (CCR) 1007-3, Part 261 4(d) 'Samples' If
problems with the disposal of excess sample material are encountered, the
Environmental Coordinator for the generation area should be contacted for
resolution of the issues Only sample material which has not been modified
during analysis will be returned Material which has been acidified for
preservation purposed will not be returned preservation purposed will not be returned

INTER-DEPARTMENT DELIVERY:

Deliver To Building

Organization

Date 02/09/98

Page 4

Thermo NUlech - Rocky Fluts RFETS, Building T886D Goldin, Colorado 80402 (303) 966-6860

RIN: 98A1028 Report Date: 02/15/98

Sample and Duplicate Analysis Results

		(Pross Alpha			Gross Bets	1		
Customer Sample ID	Lab Sample (D	Activity	Unc. (2s)	MDA	Activity	Uoc. (2s)	MDA	Units	QC Batch
98A1028-001 001	98020150-01	2	1	1	5	1	2	рСи	98AB028
95A1028-001 001	98020150-05 D	1	1	1	2	1	2	рСИ	98AB028

Preparation Blank Results

		,	Tross Alpha			Gross Bets	1	
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units
98AB028	98020150-08	۵,0	07	12	0.2	13	2.2	PCN

LCS Results

}			(Irose Alpha)		Gross Bets	1		
	QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Une. (2e)	MDA	Units	\$RM
	880888	96020150-07	20,0	4.5	4.8	22.1	51	6.9	рСИ	8AB_CTRL10

Thermo NUtech-Rocky Flats RFETS, Building T886D Goldin, Colorado 80402 (303) 966-6860

RIN: 98A3028 Report Date: 02/15/98

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activities in a low background, thin-windowed, gas flow proportional counter. Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. Analysis of aqueous samples and prepared non-aqueous samples is described in detail in Rocky Flats Procedure, L-6240, "Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples".

Preparation of oils, solvents and other combustible organics is described in L-6194, "Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity". The counting procedure is described in procedure L-6295, "Operation of the Tennelec LB4100 Gas Proportional Counters".

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg). Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves. These standards are prepared from certified reference material which is traceable to the National institute of Standards Technology (NIST).

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported. If the reported result is based on the average of two or more counts, the average MDA is reported.

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank. Each set of samples forms a "QC Batch" and is assigned a QC batch number. A sample can be traced back to its corresponding quality control samples through the QC Batch number. The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis. The activities reported for samples and standards were not corrected for preparation blank activity. The alpha and beta laboratory control samples are aqueous standards of ²⁴¹Am and ²⁶Sr, respectively. The SRM standards used to prepared these standards are traceable to NIST. The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carned through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts. The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed. A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package.

Narrative

This sample was submitted for a redscreen analysis and also for analysis of gross alpha/gross beta activity. The redscreen planchets were prepped according to procedure L-6278, "Sample Preparation for Radiological Screening by Gas Proportional Counting", in QC batch 98RS042. A copy of the radscreen report is included in Appendix A of this report. The samples were prepared for analysis of gross alpha/gross beta activity using procedure L-6240, "Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samoles" in QC batch 98AB028. Sample 98020150-05 is a lab duplicate of sample 98020150-01. There were no problems noted with these analyses and all QC data are acceptable.

0007

	D. I Unit 4-Bromof Juorobenza Toluene	Sample RFW#* Sample RFW#*	RFW Batch Number: 9802G393
	100 × ×	9841028-001. 003 001 WATER	Client: ICE
	888 E5/L5	98A1028-001. 003 001 DL WATER	Recra LabNet METHOD 8260 Katser-98A102
	180 180 187L	YBLKFN 98GYT054-MB1 WATER	YOLATILES
25	198 199 199/L	YBLKFM BS 986VT054-VB1 WATER	/ Work Order, 11830
PRELIMENARY			Report Date: 03/10/98 15:33 11830-001-001-9 Page: 1a

⟨'

B123, RM 125 Sump

Openo 158

OA .	
1,3-Dichloropropane 1,2-Dibromochloromethane 1,1,1,2-Tetrachloroethane 1,1,1,2-Tetrachloroethane 1,1,1,2-Tetrachloroethane Ethylbenzene Bromoform Isopropylbenzene 1,2,3-Trichloropropane n-Propylbenzene 2-Chlorotoluene 2-Chlorotoluene 1,3,5-Trimethylbenzene 1,3,5-Trimethylbenzene 1,3-Trinethylbenzene 1,3-Dichlorobenzene 1,2-Trinethylbenzene 1,2-Trinethylbenzene 1,2-Trichlorobenzene 1,2-Dichlorobenzene 1,2-Dichlorobenzene 1,2-Dichlorobenzene 1,2-Dibromo-3-Chloropropane 1,2-Dibromo-3-Chloropropane 1,2,3-Trichlorobenzene	
, , , , , , , , , , , , , , , , , , , ,	2
	₹
	3 2 2
	986VT054-MB1
	ORGANISA - MRI
PRELIMINARY	

PRELIMINARY

B123, RM 125 sump

Order: 11830-001-001-9 VBLKFM BS

Trichlorotrifluoroethane Xylene (total) DiBROMOFLUOROMETHANE *- Outside of EPA CLP QC limits.	李	RFW Batch Number: 98026393 Cust ID:	
99.55 39.55 39.55	001	Cust 10: 98A1028-001.	
S BE	061 DL	ICF Kaiser-98A1028 L. 98A1028-001. VBLKFM	
0.5 U	98GVT054-MB1	VBLKFM	1312
0.5 U 109 % 113 % 200 Itola g	98GVT054-MB1 98GVT054-MB1	Work Order: 11830-001-001-9 YBLKFM BS	B123, RM 125 Sump
		Page: 1c	

PRELIMINADY REPUBLI

Pyridine 1.4-Dichlorobenzene o-Cresol neta & para-Cresol Hexachloroethane Nitrobenzene Hexachlorobutadiene 2.4.6-Trichlorophenol 2.4-Dinitrotoluene Hexachlorobenzene Pentachlorophenol	Surrogate Recovery 2.4	Sample Information		RFW Batch Number: 9802G393
dine DichTorobenzene esol & para-Cresol & para-Cresol & para-Cresol esol esol esol & para-Cresol esol enzene chloroethane benzene benzene benzene chlorophenol binitrotoluene chlorophenol etside of EPA CLP QC limits.	2-r lucropneno: Pheno] -d5 Pheno] -d5 Nitrobenzene-d5 2-Flucrobipheny! 2.4.6-Tribromopheno] p-Terpheny!-d14	• •• • • • • •	Cust ID:	·: 9802G393
588854888 5888548888 5888558888	2K2288	WATER 1 Ug/L	98A1028-001.	SEMIN Client: ICE
288888888888 2888888888888888888888888	8.11.99.36 8.88 3.444444	OGS MS -MATER 1 Ug/L	98A1028-001.	Recra Lal XATTLES BY Kaiser-98AJ
トちのひド キのひよくひの	8832677 883267	986B0062-M31 WATER 1 ug/L	SBLKIN	Chicago
CZ288887827 - *************	992887 992887	98GB0062-MB1 WATER	SBLKIK BS	EACHATE FRONK Order: 11830-9
632243884736557 636666666666666666666666666666666	3522838 ********	98G80062-TC1 — WATER — ug/L	SBLKIN	/45 5 44/ 801-001-9
FERRING CONTRACTOR		 		93/06/98 13:23 Page: 1a

RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 03/12/98

CLIENT: ICF Kaiser-98A1028 WORK ORDER: 11830-001-001-9999-00

RECRA LOT # 9802G393

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
-004	98A1028-001.006	Silver. Total Aluminum, Total Arsenic, Total Barium. Total Beryllium. Total Calcium. Total Cadmium. Total Cobalt. Total Chromium, Total Chromium, Total Iron, Total Iron, Total Iron, Total Mercury. Total Potassium, Total Lithium, Total Magnesium, Total Manganese. Total Molybdenum. Total Sodium, Total Nickel, Total Lead, Total	0.15 u 63.6 0.80 u 25.4 u 15000 0.20 u 0.26 u 4.2 12.0 188 0.10 u 1070 4.8 3480 3.3 23.2 8430 1.6 55.9	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	0.15 6.6 0.80 0.10 0.10 3.8 0.25 0.25 0.35 8.4 0.10 3.7 0.55 3.8 0.25 0.25 0.25 0.25
	I	Antimony, Total Selenium, Total Tin, Total Strontium, Total Thallium, Total Vanadium, Total Zinc, Total	0.87 0.90 u 0.96 124 1 2 u 0 30 u 27.8	UG/L UG/L UG/L UG/L UG/L UG/L UG/L	0 70 0 90 0.85 0.10 1 2 0.30 0.30



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Total Activity

Analysis: Raport Date:

NA1029 Radsched 02/13/94

DOT Classification <2000 pCl/ml total activity is NONRAD
>= 2000 pCl/ml total activity as RAD

98920160-01 Laboratory Sample ID

9841028 2

Water 喜

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81.0 E E

NONRAD

Total Activity

CI DI

APO Sample iD Event.

Both 물

Calculated as the earn of the gross siphs and bets solvibles AND the measurement uncertainline for times into measurements. If the measurement unfield is negative, OpCML (instead of the negative value) is used to calculate the total activity.

Anelysis liettods Sample Prepasation Procedure: L-8278-A, "Sample Frepasation for Radiological Screening by Ges Proportional Counting" Counting Procedure: L-8285-A, "Operation of Termelac LB4100 See Proportional Counters".

Themso NUtsch - Rooky Flats Radscreen Results

Distribution/Fax: APO/3408

femal soom

WASTE CHARACTERISTICS REPORT

Case Narrative for Fingerprint Analysis

Lab Name: 559 Radioanalytical Laboratories

RF Sample ID

98A1028-001.002

Lab Code: 559 RIL

Lab Sample ID-

98A1028-001 002

RIN:

98A1028-001 002

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SS08-A are included. The method used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Minifiash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Minifiash method with the approved Setaflash method This method has been approved by the APO on 6/19/1997.

Case Namative:

On February 11, 1998 this sample was received in the 559 Laboratory. All QC was within limits. There were no anomalies during analysis.

Analysis Data Sheet for the Fingerprint Procedure

Lab Name: 559 Radioanalytical Leboratories

RF Sample ID:

98A1028-001.002

Lab Code: 559 RIL

Lab Sample ID.

98A1028-001 002

Date of Analysis: Feb 12 1998

RIN:

98A1028-001 002

			Qual	fiers	
Parameter ID	Parameter Name	Result	С	Q	Units
	Physical Appearance	Single phase, non-viscous, transparent, coloriess liquid.			NA
	Water Test	Positive			NA
10-29-7	рН	5			\$. U
	Specific Gravity	1.0075			*1
	Miscible with	Water			NA
	Reactivity with Water	No			NA
RFS-FP-97	Flash Point	NA, Aqueous Sample			degrees C
	Chlorinated Solvents	NA, Aqueous Sample			ppm

Notes:

NA - Not Applicable

*1 - relative to water @ 20 C

Approval.

Peer Review

56

S S B B B B B B B B	SAMPLERS (Signature Report to # 927/22 & Report to # 927/22 & Report to Raiser-Hill analytical laboration and the following the	SAMPLERS (Signature/Emp No) CH 4 11 (57372 1914 SWCUMNNYM 124732 23 1914 SWCUMNNYM 124732 23 1914 SWCUMNNYM 124732 23 1914 SWCUMNNYM 124732 23 1914 SWCUMNNYM 1247132 23 1914 SWCUMNYM 1247132 23 1914 SWCUMNNYM 1247132 23 1914 SWCUMNYM 1247132 23 1914 SWCUMNYM 1247132 23 1914 SWC		Cl. Required) Co. N. H. H. N. O. O. C.				1,48					Time Received By / ORG. Date/Time LABORATORY USE ONLY Y/N	The Charm! Sala	74. 1102 to 11/2 do	/ CORRECTED COPY ATTACHED	Charge # EM24/34// Cost Center	
		PLERS (Sig	L LABORA	Container #	1				\	1			Date/Fime	2.11M 1400	Tuled Klos			8

NMC Approval for movement of nonaccountable radioactive samples from an MAA NMC Transfer Approval

Appendix D - Analytical Results for the Underground Pipe to Tank D-853 in Building 428

Rinsate sample from 1 ink vv3. Building 428 Rinsate sample for underground portion of RCRA Unit 40 from B123 to B428 Sample # 98A097-001

	Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	is contaminant present above Tier 2 Action Levels?	Concern" as identified in the RCRA Closure Plan for RCRA
				day.	CZ	YES
	1 1 Dichloroethylene	U 5 U	7 00E-03	/ ppu	Q.	YES
	1 1 2-Trichloroethanc	0.50	\$ 00E-03	odd c	ON	YES
	1-1-1-Trichloroethane	0 5 U	2 00E-01	day S	ON.	YES
	1-2-Dichloroethane	0 5U	5 00E-03	2 470 pph	CN	YES
	2-Butanone (Methyl ethyl	2 U	2 47E+00	odd o/+7)	
	ketone)			3650 anh	NO	YES
	Acetone	2U	3 65E+00	000 901	ON	ON
	Aluminum Al	271 Total	1 06E+02	and own that	CN	NO
	Antimony Sb	2.2.7011	6 00E-03	odd 0	CN	YES
	Arsenic As	1 6 U Total	\$ 00E-02	dan 000 c	O _Z	YES
Jŧ	Barium Ba	37 I Total	2 00E+00	S onb	ON.	YES
•	Benzene	050	5 00E-03	dan L	CN	NO
	Ber llum, Be	0 2U Total	+ 00E-03	Odd t	ON	NO
	Bromodichloromethane	5	1 00E-01	5 pob	ON ON	YES
	Cadmium Cd	0 40U Total	3 00E-03	27 6 ppb	NO	YES
	Carbon disulfide	2 0 U	2 /0E-02	S ppb	NO	YES
	Carbon tetrachloride	0.50	1 00E 01	100 ppp	ON	YES
	Chlorobenzene	0 SU	1005-01	100 ppp	ON	YES
	Chloroform	41 E Background Contaminant	1 005-01	dag 001	YES	YES
	Chromium, Cr	588 Total	105.00	2 190 ppb	ON ON	NO
	Cobalt Co	0 5 U Total	7 19E+00	1 300 ppb	ON	NO
	Copper Cu	19 8 Total	1 30E±00	700 ppp	ON	YES
_	Ethy Ibenzene	0 SU	/ VUE-VI			,
						-

Rinsate sample for underground RCRA Unit 40 Waste Process Lines Underground Line running from B123 to B428
Simple from T853 outlet
Summarized Tuesdin Mirch 24 1998
Ted A Hopkins

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	Contaminants of concern and any contaminant present above action levels	UG/L in sample or ppb	Tier 2 RFCA Action Levels (mg/L or ppm)	Conversion of Tier 2 Action Levels to ppb	Is contaminant present above Tier 2 Action Levels?	"Contaminant of Concern" as identified in the RCRA Closure Plan for RCRA
	Iron, Fe	3310	NA, not on Tier 2 Table	NA	ON	Unit 40? NO
	Lead, Pb	21.7	Not found in RECA Tier 2 Table DRAFT Standard 15 ppb	13 ppb	YES 15 ppb.	YES
	Lithium Li	3 1 Total	7 30E+01	73,000 ppb	ON	NO
	Magnesium Mg	3200 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
	Manganese Mn	26	1 83E-01	183 ppb	ON	NO
	Mercury Hg	l 3 Total	2 00E-03	2 ppb	NO	YES
	Methylene chloride	U \$ U	\$ 00E-03	5 ppb	NO	YES
	Molybdenum Mo	\$1 1 Total	183E-01	183 ppb	NO	NO
	Nickel Ni	64 Total	10-3001	100 ppb	NO	NO
	Potassium k	1 140 Fotal	Not found in the Rf CA Tier 2 Table	NA	NO	NO
	Pyriding	70 U	Not on Tier 2 List	٩Z	NA not on Tier	YES
ϵ					7 1151	
30	Selenium, Se	1 8 U Total	5 00E-02	50 ppb	NO ON	YES
	Silver Ag	10 0 U Total	1 83E-01	183 ppb	NO	YES
	Sodium	50 300 Total	Not found in RFCA Tier 2 Table	NA	NO	NO
	Strontium, Sr	111	2 19E+01	21 900 ppb	NO	NO
	Tetrachloroethy lene	U S U	5 00E-03	5 ppb	NO	YES
	Thallium Ti	2 3 U Total	2 00E-03	2 ppb	ON	NO
_	Tin, Sn	14 6 Total	2 19E+01	21,900 ppb	ON	NO
*******	Toluene	0 SU	1 00E+00	1000 ppb	NO	YES
	Tnchloroethylene	0 SU	5 00E-03	5 ppb	NO	YES
	Vanadıum, V	2.5	2 56E-01	256 ppb	NO	NO
	Vinyl chloride	0 SU	2 00E-03	2 ppb	NO	YES
	Xylenes	0 SU	1 00E+01	10,000 ppb	ON	YES
	Zinc, Zn	25 2 Total	1 10E+01	11,000 ppb	NO	NO

Rins ite sample for underground RCRA Unit 40 Waste Process Lines I nderground Line minning from B123 to B428
Sample from T833 outlet
Summarized Fuesday Mach 24 1998
Ted A Hopkins

APO SAMPLE RECEIPT

his sample receipt is supplied to waste generators as notification of sample llection. Inquiries into the status of this sample may be directed to the alytical Projects Office (APO) by calling 966-2403, 966-7789, or 966-3771 e APO references samples by the following identification numbers

RIN 98A0997 APO Event 98A0997-001 plicate ID Issue Date 02/03/98 Waste Stream ID 428-0-0 Customer Sample ID TANK D853 Field Blank ID

Equipment Blank ID Trip Blank ID

other Id
Sample Location BLDG 428, TANK 853, UNDERGROUND

.alyses Requested:	Bottle ID
UEOUS RADSCREEN - DOT V OSS ALPHA/BETA - NO RAD ADDED (WASTE) V NGERPRINT (559) V -846 8260 (Water, Aqueous Waste) V -846 8260 (Water, Aqueous Waste)	98A0997-001 001 98A0997-001 001 98A0997-001 002 98A0997-001 003 98A0997-001 004
-846 8270B (TCLP Extracts) TAL METALS SW-846 (HG)	98A0997-001 005 98A0997-001 006

Date Sampled
Process Contact M. AYCOCK 5309 7508
ternate Contact P. VALENTINELLI 6047

turning Excess Sample Material

modified sample material remaining after analysis is generally returned to generator. The generator must be prepared to receive and dispose of cess sample material for applicable state and federal regulations gulatory exclusions for returning excess sample material are specified in the ode of Colorado Regulations (CCR) 1007-3, Part 261 4(d) 'Samples'. If oblems with the disposal of excess sample material are encountered, the vironmental Coordinator for the generation area should be contacted for esolution of the issues. Only sample material which has not been modified ring analysis will be returned. Material which has been acidified for eservation purposed will not be returned.

RTER-DEPARTMENT DELIVERY:

eliver To Building

Organization

te 02/03/98

Page 4

Thermo NUIech-Rodcy First REETS, Building T886D Golden, Colorado 80402 (303) 966-6860

RIN.

98A0997

Report Date: 02/25/98

Sample and Duplicate Analysis Results

		6	Froes Alpha	l		Gross Beta			
Customer Sample ID	Lab Sample ID	Activity	Unc (2s)	MDA	Activity	Unc. (2s)	MDA	Units	QC Batch
98A0997-001 001	98020070-01	14	08	18	2.2	10	2.3	рСИ	98AB026

Preparation Blank Results

			Gross Alpha		<u> </u>	Gross Beta		j	
QC Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	
98AB026	98020089-09	-0.1	05	12	06	09	2.2	рСИ	ı

LCS Results

			6	roes Alpha	ı		Gross Bets			
Q	C Batch	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	SRM
96	AB026	98020089-10	24.4	3.5	5.1	24 6	37	8.9	рСи	8AB_CTRL10

Associated Duplicate Analysis Results

			3 ross Alpha			Gross Bets			
Customer Sample ID	Lab Sample ID	Activity	Unc. (2s)	MDA	Activity	Unc. (2s)	MDA	Units	QC Batch
98 A0996-004 019	98020069-04	0.9	0.4	14	13	0.7	2.2	рСИ	98AB026
98A0998-004 019	98020069-08 D	0.7	0.6	1.4	0.5	10	2.2	рСИ	98AB026

Thermo NUtech - Rocky Flats RFETS, Building T886D Golden, Colorado 80402 (303) 966-6860

RIN 98A0997 Report Date: 02/25/98

Method Summary

Gross alpha and gross beta activities are measured by evaporating an aliquot of the prepared sample onto a counting planchet and counting the alpha and beta activities in a low background, thin-windowed, gas flow proportional counter. Organics or combustible solids are ashed, the residue dissolved in acid, and the solution or an aliquot of the solution is evaporated onto a counting planchet. Aqueous samples are concentrated and then evaporated onto a counting planchet. Analysis of aqueous samples and prepared non-aqueous samples is described in detail in Rocky Flats Procedure, L-6240, "Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples"

Preparation of oils, solvents and other combustible organics is described in L-6194, "Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity" The counting procedure is described in procedure L-6295, "Operation of the Tennelec L84100 Gas Proportional Counters"

The detector counting efficiency and self-absorption effects of the salt residue on the planchet are determined from calibration curves which are generated by counting several planchets prepared with a known amount of alpha or beta activity and increasing amounts of salt (0 to 100 mg). Americium-241 is used as the spike for the alpha curves and a solution of Sr-90, Y-90 is used for the beta curves. These standards are prepared from certified reference material which is traceable to the National Institute of Standards Technology (NIST)

The theoretical minimum detectable activity (MDA) for the analysis is based on the detector background, detector efficiency and self-absorption effects, count time and quantity of sample analyzed. The MDA for each analysis is calculated and is also reported. If the reported result is based on the average of two or more counts, the average MDA is reported

Quality Control Summary

A sample batch consists of eleven or fewer samples, a duplicate of one of the samples, an alpha and a beta laboratory control sample, and a preparation blank. Each set of samples forms a "QC Batch" and is assigned a QC batch number. A sample can be traced back to its corresponding quality control samples through the QC Batch number. The preparation blank (PB), an aliquot of deionized, distilled water, is prepared and analyzed with the samples to confirm that the samples were not contaminated during the analysis. The activities reported for samples and standards were not corrected for preparation blank activity. The alpha and beta laboratory control samples are aqueous standards of ²⁴Am and ²⁰Sr, respectively. The SRM standards used to prepared these standards are traceable to NIST. The duplicate, designated as the sample ID followed by a "D", is a second aliquot of one of the samples in the QC Batch which is carried through the procedure as a separate sample.

The instrument QC includes determining instrument backgrounds weekly and counting an instrument check source daily on the Tennelec LB4100 multidetector gas proportional counters. The instrument backgrounds are based on the average of at least five, and normally ten or more, 4 hour counts. The instrument check sources are counted daily to verify that the efficiencies of the detectors have not changed. A summary of the instrument backgrounds is included in the instrument raw data section of this report. The daily check source information is available in the supporting documentation package.

Narrative

This sample was submitted for radscreen analysis and analysis of gross alpha/gross beta activity for No-Rad-Added assessment. The radscreen analyses were done according to procedure L-6278, "Sample Preparation for Radiological Screening by Gas Proportional Counting" in QC batch 98RS038. The gross alpha/gross beta analyses were done using procedure L-6240, "Sample Preparation for Analysis of Gross Alpha-Gross Beta Activity in Aqueous Samples" incorporating the quality control requirements of procedure L 6194, "Preparation of Oils and Solvents for Analysis of Gross Alpha and Gross Beta Activity" in order to comply with the No-Rad-Added program quality requirements. The gross alpha/gross beta analyses were done in QC batch 98AB026. This batch also included samples from RIN 98A0996. The lab duplicate for the batch was done using sample 98020069-04 from 98A0996. This report contains copies of documents which are common to both reports. The originals are included in report 98A0996. There were no problems noted with the analysis of this sample and all QC data for the batch are acceptable.

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9840999 900 — WA	2000 	30 000 i
Cust ID: RFI#: Matrix: D.F.: Units:	4-Bromoflucrobenzene Toluene-d8 Toluene-d4 Ly2-Dichloroethane e de de oromethane chloroethene sthane oropane loride chloroethene sthane strane frane	Dibrogramethane Poluene 1.1.2-Irichloroethane Tetrachioroethane Tetrachioroethane Tetrachioroethane
9769 a376	Toluk Oeth	
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RFW Batch Number: 98026376 Cample Information	Surrogate To Recovery 1,2-Dichloroel Dichlorodifluoromethane Chloromethane Chloroethane I.1-Dichloroethane I.1-Dichloroethane Chloroethane I.1-Dichloroethane I.1-Dichloroethane I.1-Dichloroethane Cis-1,2-Dichloroethane Cis-1,2-Dichloroethane Chlorofom II.1-Irichloroethane Chlorofom II.1-Dichloroethane Chlorofom II.1-Dichloroethane Chloroethane Chloroethane II.1-Dichloroethane II.1-Dichloroethane II.1-Dichloroethane Carbon Tetrachloroethane II.1-Dichloroethane II.1-Dichloroethane II.1-Dichloroethane II.1-Dichloroethane II.1-Dichloroethane II.1-Dichloroethane II.1-Dichloroethane III.1-Dichloroethane III.1-Dichlor	Dibroncmethane Bromodichloromethane Toluene 1.1.2-Trichloroethane Tetrachloroethene
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-001-001-9 VBLXAX	98GYF056-1481 S	ວດດດດດດດດດດດດດດດດດດດດດດດດດດດດດດດດດດດດ	
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RFW Batch Number, 98026376 Cust ID: 94	RFIJ	1.3-Dichloropropane Dibramochloropethane 1.2-Dibramochloropethane Chloroberzene Etitylbenzene Etitylbenzene Etitylbenzene Styrene Bromobenzene 1.2.3-Trichloropropane 1.2.3-Trichloropropane 1.2.3-Trichloropropane 1.3.5-Trimethylbenzene 2-Chlorotoluene 2-Chlorotoluene 1.3.5-Trimethylbenzene 1.3.5-Trimethylbenzene 1.3.5-Trimethylbenzene 1.3.5-Trimethylbenzene 1.3-Otchlorobenzene 1.3-Otchlorobenzene 1.2-Dichlorobenzene 1.2-Dichloropenzene 1.2-Dichloropenzene 1.2-Dichloropenzene 1.2-Dichloropenzene 1.2-Dichlorobenzene 1.2-Dichloropenzene	•

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02/25/98 13.50 Page: 1a	SBĹKIA	98GB0056·TC3 WATER 1 ug/L	ଟଅଞ ଛ ଞ୍ଜ ୪୪୪	688854884588
Report Date: -001-001-9	SBLKHZ	98580056-TC2 WATER 1 ug/L	8477682 *******	58885888888888888888888888888888888888
HATE K Order, 11830	SBLKHY	98GB0056-TC1 WATER 1 ug/L	10568877 105688877	68.686 488688888888888888888888888888888
t · Chicago /MS, TCLP LEACH 7 7853 Hork	SBLKHX BS	98GB0056-NB1 NATER 1 ug/L	E78588	87 28898888248
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SEMIYC	76.1 DES3	WATER 1	1284889 284889 28484	දහයමද්දුම්ම්ප්ස්තිය වස්තිය සිතුම්ප්ස්වේශ්ර
	ust ID	RFM#. Matrix D F.: Units.	2-Fluorophenol Phenol-d5 Nitrobenzene-d5 2-Fluorobipheny? 2.4,6-Tribromophenol p-Terpheny?-d34	Pyridine 1.4-Dichlorobenzene o-Cresol meta & para-Cresol Hexachloroethane Nitrobenzene Hexachloropherol 2.4.5-Trichloropherol 2.4.5-Trichloropherol Pertachloropherol 4.5-Ornitrotoluene Hexachloropherol 6.4.5-Trichloropherol 6.5.4.5-Trichloropherol 7.5.4.5-Trichloropherol
RFW Batch Number: 98026376		Sample Information	- Surrogate Recovery	Pyridine 1,4-Dichlorobenzene o-Cresol meta & para-Cresol Hexachloroethane Nitrobenzene Hexachlorobutadiene 2,4,5-Trichlorophenol

RECRA LABNET - CHICAGO

INORGANICS DATA SUMMARY REPORT 02/25/98

CLIENT: ICF Kaiser-98A0997 — 7853 WORK ORDER: 11830-001-001-9999-00

RECRA LOT #: 9802G376

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT
SAMPLE -003	98A0997-001.006 Tapek D853	Silver. Total Aluminum, Total Arsenic, Total Barium, Total Beryllium, Total Calcium, Total Cadmium. Total Cobalt. Total Chromium, Total Copper. Total Iron, Total Mercury, Total Potassium. Total Hercury, Total Magnesium, Total Magnesium, Total Manganese. Total Molybdenum, Total Nickel, Total Lead, Total Lead, Total Antimory, Total Selenium, Total Tin. Total Tin. Total Thallium, Total	10.0 u 271 1.6 u 37.1 0 20 u 13100 0.40 u 0.50 u 588 19.8 3310 1.3 1140 3 1 3200 26.0 51.1 50300 64.0 21.7 2.2 1.8 u 14.6 111 2.3 u	UG/L UG/L UG/L UG/L UG/L UG/L UG/L UG/L	10.0 13.1 1.6 0.20 0.20 7.6 0.40 0.50 0.70 16 9 0.10 7.4 1 3 7 6 0.50 0.50 177 0.60 1.2 1.4 1.8 1.7 0.20 2.3
'		Vanadium, Total Zinc, Total	2.5 25.2	UG/L UG/L	0 60 0.60

LEB-11-20 MEN 03:42 MU FUGITHTHING DEDG CCC

PAX NU

M. UH

WASTE CHARACTERISTICS REPORT

Case Nametive for Fingerprint Analysis

Lab Name: 559 Radioanslytical Laboratories

RF Sample ID:

98A0997-001.002

Lab Code: 559 RIL

Lab Sample ID:

98A0997-001,002

RIN:

9840997-001,002

This report provides fingerprint data for a sample analyzed per procedure L-4178. Requirements per Module SSO8-A are included. The tristhod used for the determination of the ignitability characteristic does not currently comply with 40 CFR 261.21. A Miniffash instrument is used to determine the ignitability characteristic. Comparison data has been generated which demonstrate acceptable comparability of the Miniffash method with the approved Setaffash method. This method has been approved by the APO on 6/19/1997.

Case Narrative:

On February 9, 1998 this rineate sample was received in the 559 Laboratory. All QC was within limits. There were no anomalies during analysis

Analysis Date Sheet for the Fingerprint Procedure

Lab Namer 559 Redioanalytical Laboratorius

RF Sample ID:

98A0997-001.002

Lab Code: 559 RfL

Lab Sample ID:

98A0997-001,002

Date of Analysis: Feb 10 1998

RIN:

98A0997-001.002

			Qualifiers		5	
Parameter ID	Parameter Name	Result	С	۵	Units	
	Physical Appearation	Single phase, transparent, coloriess, non-viscous liquid.			NA	
	Water Test	Positive			NA	
10-29-7	pH	9	100 AV W		5. U.	
	Specific Gravity	1.0057	\$ 100 Per 1		41	
	Miscible with	Water			NA	
	Reactivity with Water	No			NA	
APS-FP-97	Flash Point	NA, Aqueous Sample	1.00A11 1.00A114 1.00A114		degrees C	
	Chlorinated Solvenss	NA, Aqueous Sample			ppm	

Notes:

NA - Not Applicable

*1 - relative to water @ 20 C

Approval: _

Peer Review:

70

